

# MOTOR AGE

FOR AUTOMOTIVE SERVICEMEN

A CHILTON PUBLICATION

FEBRUARY 1942

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Argument Here...*

When tires are worn down to the fabric,  
they're obviously unsafe.

*AND NOW THERE'S  
NO ARGUMENT  
HERE!* →

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# MOTOR AGE

With Which is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

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February, 1942

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# MOTOR AGE

FEBRUARY 1942

## Weld

With the difficulty in securing certain parts, capable service men are depending on welding to keep their customers' cars on the road. Salvaging of all types will come into greater use as the war progresses and servicemen should make every effort to conserve parts and keep their customers' cars running as economically as possible.

## Winner

Cylinder walls only 1/16 in. thick is all that keeps the pistons out of the water jackets on Tony Thill's 1929 auto. Tony has driven the car over 10,000 miles since the rebore job without any trouble, thereby winning an argument with me, as I had told him he was heading for trouble.

## Hoarding

Judging by the hoarding of automotive parts which is being practiced by some car owners, repairmen are going to be deluged with requests to install parts supplied by the car owner and from which they will therefore receive no profit. When those cases arise, repairmen will be justified in increasing their hourly rate.

## Quotas

The list of tire allotments to the various states was viewed with considerable interest by many servicemen, as it is difficult to reconcile Texas' receiving 12,530 tires and hav-



# SHOP TALK

By

*Bill Toboldt*

ing 1,343,673 passenger cars registered, with New York having 2,407,253 cars registered and receiving only 7,427 tires. Vermont, a rock-bound Republican state with 84,017 cars registered received 257 tires, while New Mexico with 95,795 cars received 658 tires. Maine with 161,982 cars received 534 tires, while Mississippi received 1,961 casings for 198,086 cars. The tire quota figures given above are from the OPM bulletin "Victory," issue of Jan. 6, and the accompanying article states that

"division of tires among the states, counties based mainly on registration of vehicles."

## Timing

Servicemen should be careful to retard the spark timing over the normal setting because of the reduction in octane rating of gasoline which has taken place since the start of the war. Otherwise, life of valves and spark plugs will be considerably shortened.





# DEMANDS AUTOMOBILES

**Boost in parts supply only  
one of many signs pointing  
to busier shops during war**

**By BILL TOROLET**

**T**HE recent government order placing replacement parts quotas for the first six months of 1942 for passenger cars and light trucks at 150 per cent of the volume of parts sold in the entire 12 months of 1941 is undoubtedly the most encouraging news the maintenance industry has heard for many months.

This additional production is to provide a stock pile with which to meet parts requirements for 1942 and 1943. The assurance of a larger supply of parts should overcome the pessimism with which many repairmen were viewing the future.

This pessimism existed in spite of the fact that the maintenance business was enjoying the highest volume it has had in years. It all started with Ickes' gas famine.

The trade had barely gotten over that scare when war was declared and the industry faced in rapid succession the rubber shortage, the freezing of tire stocks, and finally the cessation of the manufacture and sale of passenger cars and light trucks. The

situation was further complicated by difficulty in getting certain parts such as fan belts, gaskets and body parts.

But the repair men are overlooking certain all-important facts when they allow such conditions to force them into a belief that automotive maintenance will soon shut its doors for the duration. First of all, no one knows better than the government the important part being played by the passenger car in the national economy and the necessity of keeping them rolling.

Figures compiled by the Automobile Manufacturers Association show that the annual necessity mileage of passenger cars reaches the astounding total of 274,000,000,000 miles, while commercial means of passenger transportation, including steam and electric railways, buses and air lines total only 72,522,000,000 miles. In other words, necessity passenger-car mileage is nearly four times greater than the other forms of transportation.

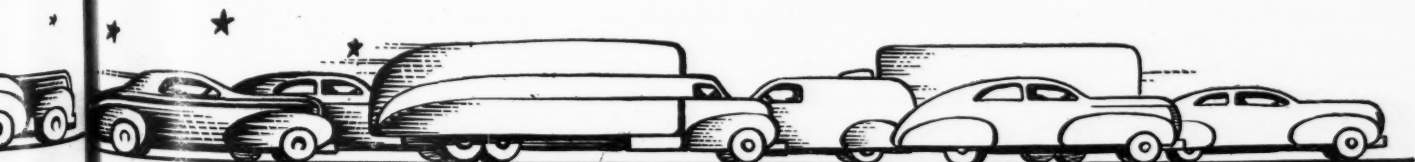
Since those figures were compiled, the percentage of necessity mileage has undoubtedly increased as the result of increased armament production and in many instances arms plants are located in isolated districts with no provision for the workers' transportation other than their own automobiles.

Obviously it is impossible for commercial transportation systems to absorb the existing and increasing passenger car mileage. Even in metropolitan areas, where there are existing bus, trolley and train service, it would be impossible because there are insufficient cars and buses to carry the passengers who are now using their cars. Furthermore, factories building buses and railway cars are already working full time producing armament and munition of various kinds.

Of equal importance in the economy of the United States are the trucks. This is emphasized when consideration is given to the fact that 40 percent of the nation's communities are served exclusively by trucks. In addition, any curtailment in trucking activity will make it still more difficult for the railroads which are already working to capacity carrying armament and raw materials.

Another point overlooked by pessimistic repairmen is that the rubber situation, while difficult, is not impossible to solve. First of all, existing tires would in most instances last for another year. This is based on the assumption that the life of a new tire is approximately 20,000 miles and that half of its normal life has been used. If, at the end of the year the

*(Continued on Page 70)*





Chuck began to replace the valves. "And I said that a carbon and valve job was a cinch."

**"WAIT!"** Pop O'Neill, from the lathe where he was turning down a commutator, had glanced around in time to see Chuck Masters drop a new headgasket over the studs of the L-head Six on which he had been doing a carbon and valve job. Chuck started at the shout and straightened. Then he turned a perplexed look on Pop as the latter approached.

"I just wanted to get a look at that job before you put the head back on," said Pop.

"It was just a carbon-and-valve job," said Chuck.

Pop nodded his white-thatched head in a way that Chuck had come to recognize as silent sarcasm.

"Yeah," said Pop. "Just a carbon-and-valve job. I've been hearin' that crack all my life. I don't know who started it, but one thing's

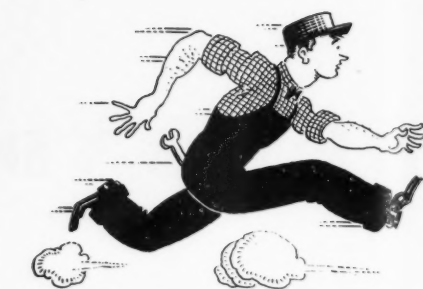
sure: It wasn't a good mechanic."

"I didn't mean it wasn't important," said Chuck. "Only Jim's always sayin' it's a cinch alongside some other jobs."

Leaning against the front door of the car, Pop rested his right heel on the running board and waggled a finger at Chuck.

"Get this into your head, kid," he said. "No job's a cinch on an automobile. You played enough football in high school to know a team don't win many games when one of the players is a quitter. Well, a car's like a team. Every part's got to do its bit. You're just startin' in the business so you might as well get started right. Get those valves out of there while I finish turnin' that commutator."

When he came back, Chuck had the valves racked up in the valve



## DOING



### THE MOTOR AGE

### BASIC COURSE for MECHANIC TRAINING

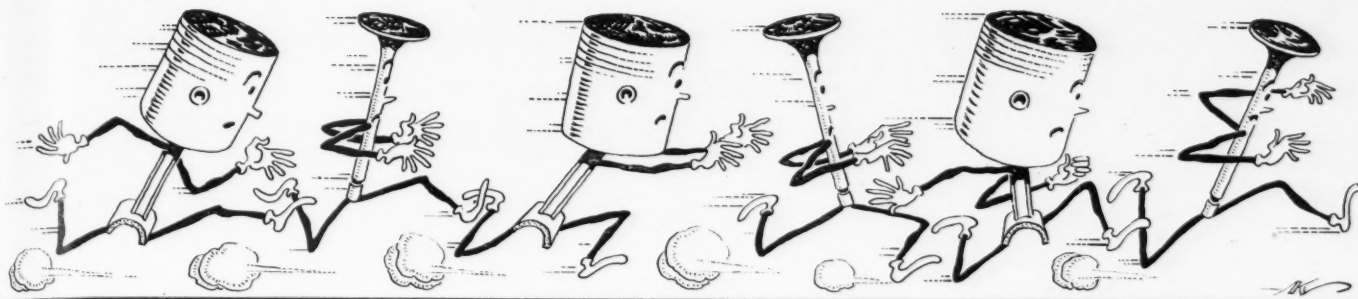
board. Pop picked up one of them. "Did you test these when you put 'em back?" he asked.

"I thought—" Chuck began.

"That they just ought to seat, eh? Well, they ought to, but sometimes they don't. When I was learnin' my trade, my boss showed me a trick. I'll show you." With a pencil, he drew four short lines on the face of the valve, dividing the circle into quarters. Then he dropped the valve into the proper guide and, pressing down firmly, twisted it a half turn. Withdrawing it, he held it up. "See that? Every line has disappeared. That means it has a good seat. Let's try another one."

This time the valve came out with only one of the four lines erased. The other lines were as clear as when they had been drawn. Pop





# CARBON AND VALVE JOBS

**Pop O'Neill's young helper  
learns that even a routine  
task demands care and skill**

**By J. EDWARD FORD**

picked up still another valve. He shook his head.

"This is bad. See how it's ground? Away off center. Remember what I told you when I chucked the first valve for you in the refacer?"

Chuck was dead serious now. This was the first time he had drawn any real censure from Pop but he realized that something had gone wrong. "You said to be sure the valve stems were straight," he said. "All of 'em looked straight to me."

"You can't depend on looks," said Pop. "Come on over to the refacer a minute." He found an old valve on the bench. "This one looks straight, too, don't it?" He chucked it in the refacer and turned it slowly by hand. "Watch the distance between the seat and the

wheel," he said. "It's greater now than when I turned it over. In other words, the stem is bent or the head is warped. That's why you got that off-center face on that valve I just spoke to you about."

"I'm sorry," said Chuck. "I won't slip up like that again."

Pop took himself half a seat on the bench. "No harm done, Chuck," he said. "I just wanted to show you how important a carbon and valve job is. You saw the shape that car was in when it was driven in—sluggish, and knocking under load. When we put the pressure gage on it, we found poor compression in three cylinders. We poured a little oil in the cylinders. That would have helped the compression if the trouble had been with the rings. It didn't, so we knew it was the valves.

"Now we've done a lot of work. We scraped the carbon off the head and we cleaned and polished the valves with that wire wheel we've got on the grinder. And you cleaned out the valve guides with the cleaner attachment for the electric drill. At least, I showed you how to do it."

"Oh I did it all right," said Chuck. "The guides are as clean as a hound's tooth."

"It would be a shame, wouldn't it," asked Pop, "if we went to all that trouble and the owner found out that the engine wasn't any better than before?"

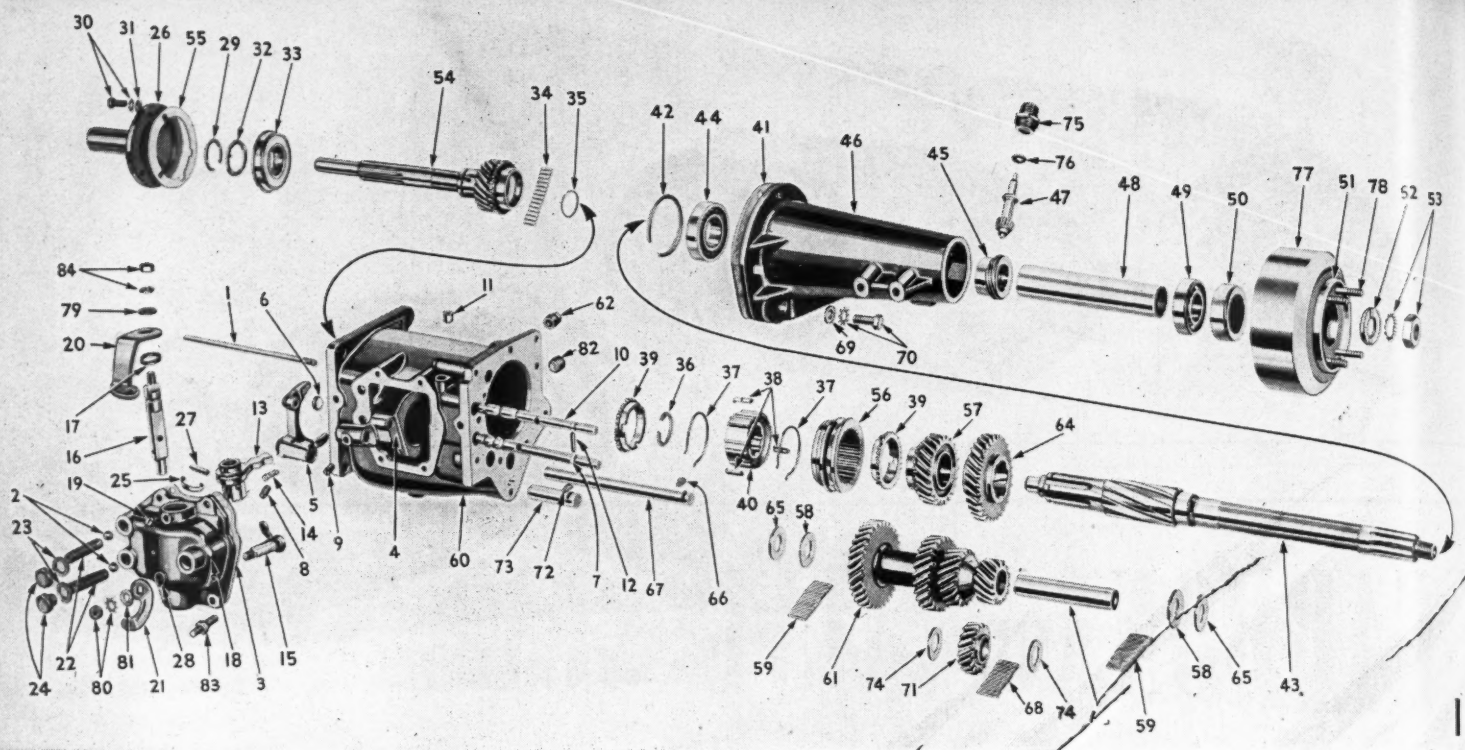
"It's bound to be better," said Chuck. "All the carbon has been cleaned out."

"But at least two valves don't seat. That's what we're checkin' up on now. And unfortunately they're both exhaust valves. You know what happens when they don't seat?"

"Why," said Chuck, no longer sure of himself, "the charge would slip past on the compression stroke."

"It would do that all right," agreed Pop, "but on the power stroke the burning gas would be forced past it. Then we'd have a burned valve and eventually a pitted seat. In a little while, we'd have an engine as bad as this one was when it came in."

Easing himself down from the  
(Continued on Page 58)



The mechanical procedure in this and other articles in Motor Age supplements the Service Section of the Chilton Flat Rate and Service Manual, the book used by 26,000 maintenance shops.

# TRANSMISSION

**Detailed instructions and photographs to help save time when doing this work on a 1941 model Plymouth**

**T**O remove the transmission from the car, first remove the propeller shaft. Loosen the main shaft flange nut; disconnect the speedometer cable; disconnect the hand brake cable at the brake band; disconnect the gear shift control rod and the gear shift selector rod at the transmission. Remove the cap screws holding the transmission to the clutch housing, pull the transmission back and lower it to the floor. Drain lubricant from transmission, and follow the procedure listed below to disassemble the unit:

1. Remove the speedometer drive pinion (47 in Fig. 1.)

2. Remove two screws (24 in Fig. 1 and 2) on the transmission cover which retain the detent springs and balls for the shifter rails. (Screws also shown as 5 in Fig. 3).

3. Remove four screws (83 in Fig. 1, and 6 in Fig. 3), and remove the transmission cover and gear selector (4 in Fig. 3).

4. Remove the nut, flat washer and lock washer (53 and 52, Fig. 1) from the rear of the transmission main shaft, and pull off the main shaft flange (51, Fig. 2) and brake

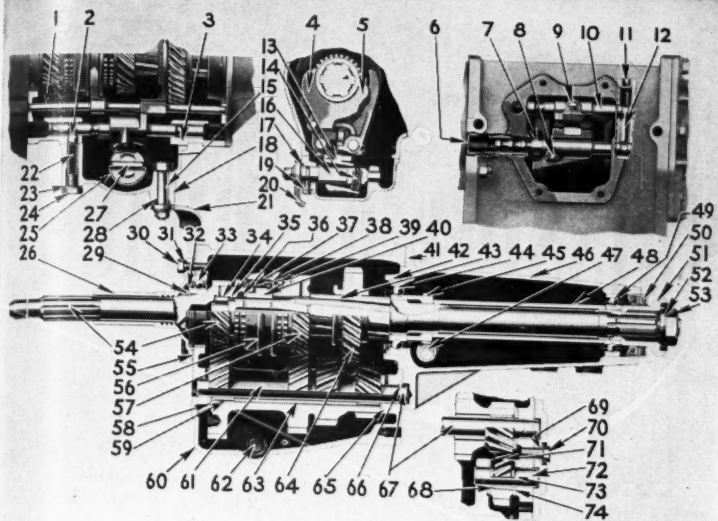
drum (77, Fig. 1), by using special puller.

5. Unscrew the shifter fork guide rail (shown as 1 in Fig. 1, 2 and 3) from the front of the transmission case, and pull it out.

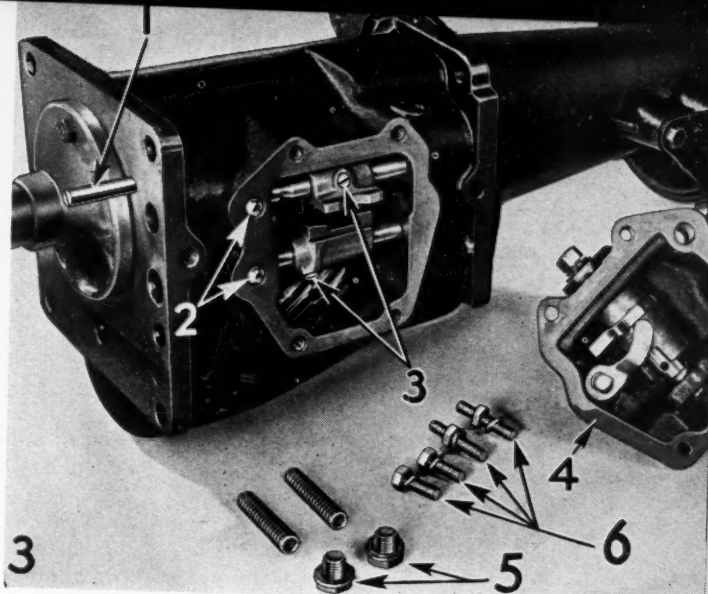
6. With transmission gears in neutral, remove the two lock screws (3 in Fig. 3) which hold the shifter forks to the shifter rails.

7. Remove the welch plug (6, Fig. 1 and 2) by collapsing it with a center punch, and remove the upper and lower shifter rails by sliding them out through the front of the transmission case.



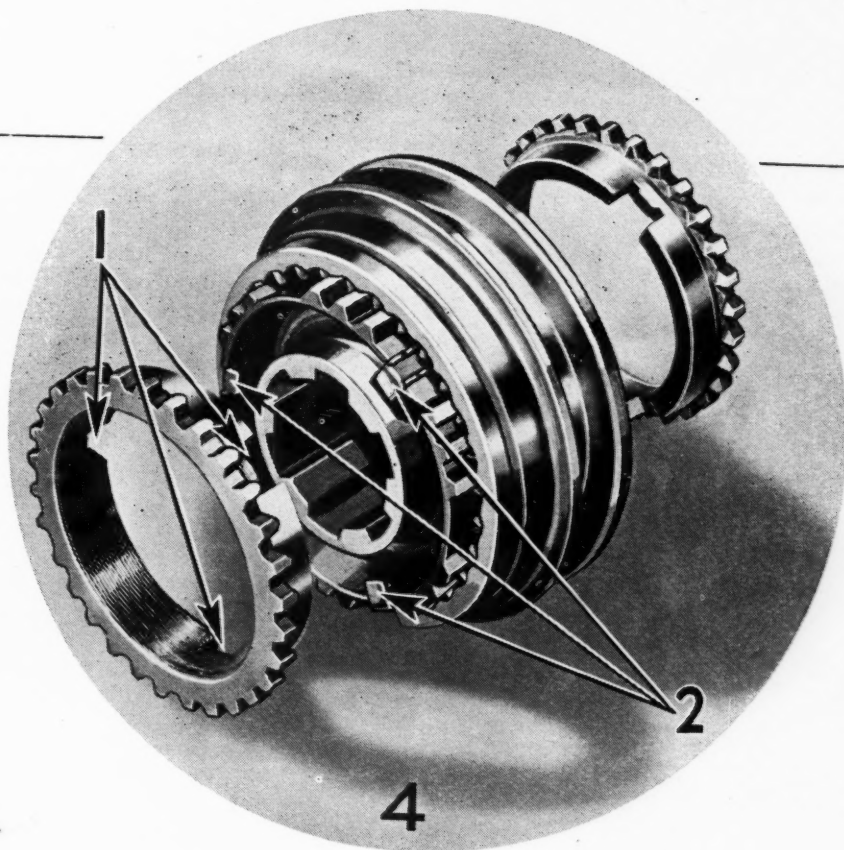


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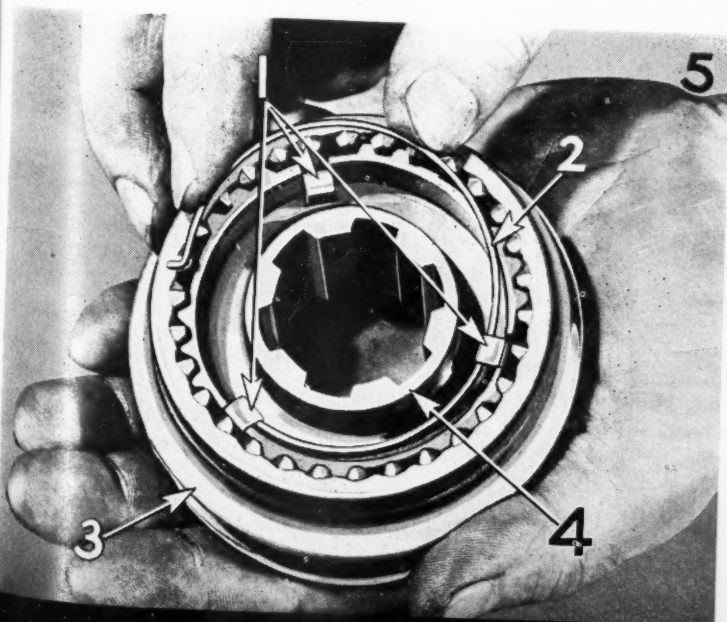
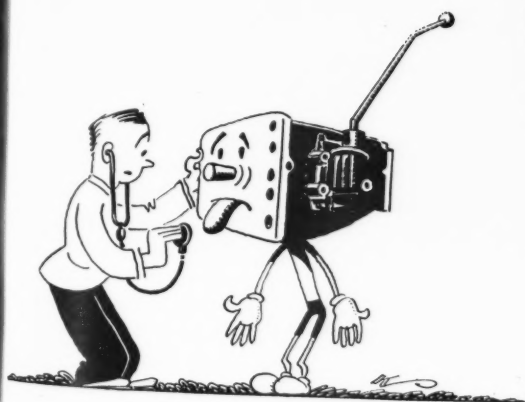


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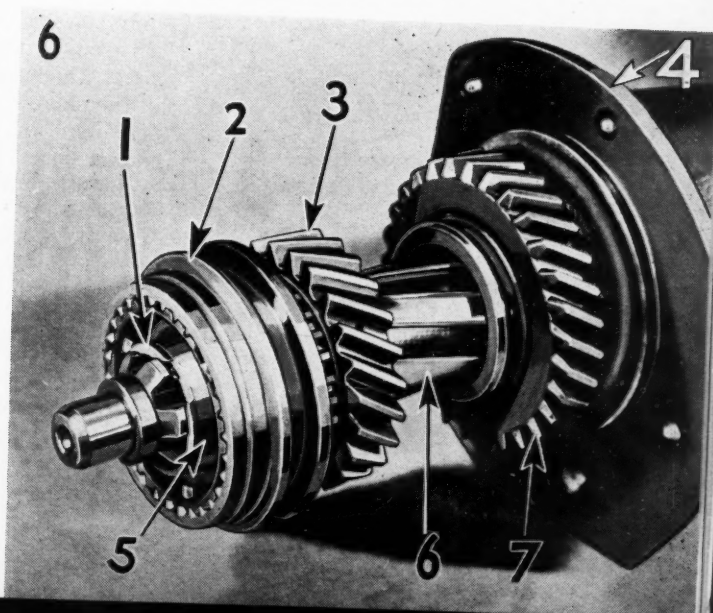
# OVERHAUL



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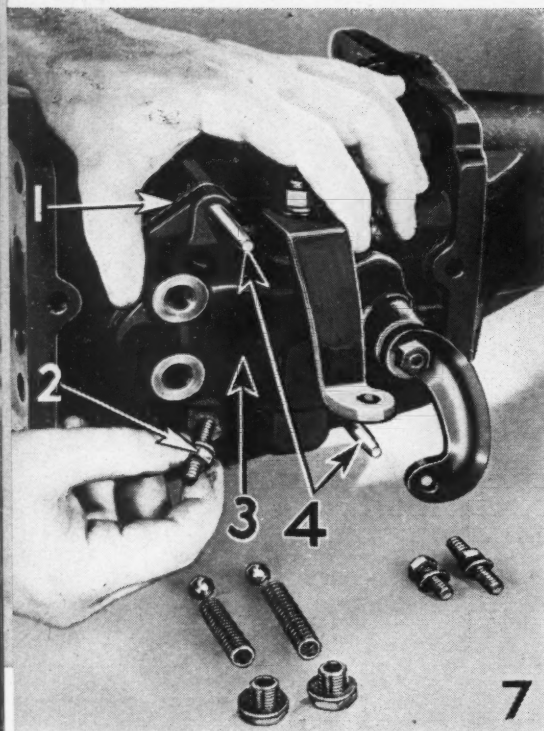


5



6

# TRANSMISSION OVERHAUL



8. Lift out the shifter forks (4 and 5 in Fig. 1).

9. Drive plug (11, Fig. 2) down into the drilled hole with a center punch, and then pull the plug out, and remove the interlock (12, Fig. 2).

10. Remove cap screws (70, Fig. 1) holding extension housing (46, Fig. 1) to transmission case. Then remove the housing and the mainshaft assembly from the transmission, being careful not to disassemble the synchronized clutch assembly.

11. Remove synchronizer retaining snap ring (36 in Fig. 1 and 2; also shown as 1 in Fig. 6). Then remove the synchronizer unit, second speed gear and low speed gear.

12. Remove transmission rear bearing snap ring (42, Fig. 1 and 2), and pull the mainshaft (43, Fig. 1 and 2) out the front of the extension housing.

13. Remove bearing (44), spacer (48), and speedometer drive gear (45) from mainshaft.

14. Next remove extension rear oil seal (50) and rear bearing (49) from extension housing. The bearing is pressed into the housing, and has no snap ring. It is held in place by the spacer (48) and the flange (51).

15. Drive the countershaft out toward the rear of the transmission case. Key (66, Fig. 1 and 2) keeps countershaft from turning. Pick this key off shaft as shaft is driven out. If a drift, the same diameter as the countershaft but only the length of the cluster gear, is used to drive out the countershaft, the drift can be left in place in the cluster gear to keep the roller bearings in position inside the cluster gear. This will save considerable time when the job is reassembled.

16. Remove screws (30, Fig. 1 and 2) holding main drive gear retainer to front of case, remove retainer (26, Fig. 1 and 2), and the main drive pinion and bearing assembly (33 and 54, Fig. 1 and 2).

17. Remove snap ring (35) and pick out roller bearings (34) from

rear of main drive pinion. Remove snap ring (29) and press bearing (33) off main drive gear shaft.

18. Lift out cluster gear (61), thrust washers (65) and thrust washer plates (58).

19. Drive the reverse idler gear shaft (73) out toward the rear of the case. Pick out key (72) and shaft comes out. Then lift out reverse idler gear (71).

Wash all parts in cleaning solvent. Replace all oil seals and gaskets with new ones, and also use new snap rings. When reassembling the transmission, the following checks should be made:

Cluster gear end play should be not less than .002 in., or more than .008 in.

Second - speed gear end - play should be not less than .003 in. or more than .008 in.

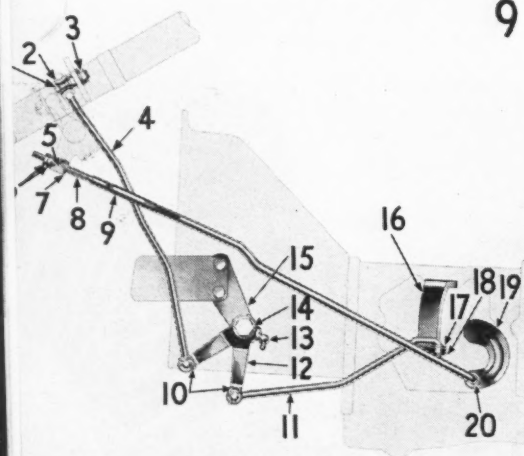
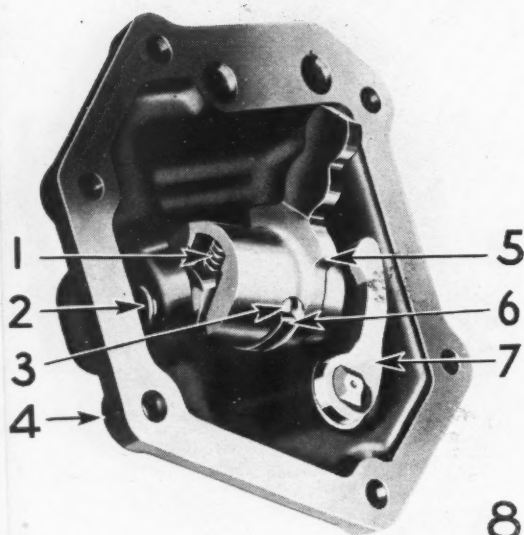
When installing cluster gear, the steel thrust washer plate (58) should be next to the gear, and the bronze washer (65) should be between the steel washer and the case.

Follow Figs. 4 and 5 when reassembling the synchronizer unit. Slots in stop ring (1 in Fig. 4) should engage the three plates (2, Fig. 4) as shown. Plates are held in position by lock ring (2, Fig. 5).

When installing the cover and gear selector assembly, (Fig. 7), be sure the gearshift selector lever enters the gear shifter fork slots. Use screws two as guide pins and install them first; then install the two short cap screws.

Should it be necessary to disassemble the gearshift housing assembly (Fig. 8), first remove the retaining nut and lift off the selector lever (21, Fig. 1). The remove the selector cam and shaft assembly (7, Fig. 8). Remove the gearshift lever pin lock spring (6, Fig. 8) by prying it out of the pin holes, and then drive out the pin (3). Remove the set screw (19, Fig. 1 and 2), compress the gearshift lever return spring (1, Fig. 8), and slide the shaft (2) out of the housing.

To adjust the gear shifter control  
(Continued on Page 49)







## WHAT'S WRONG HERE?

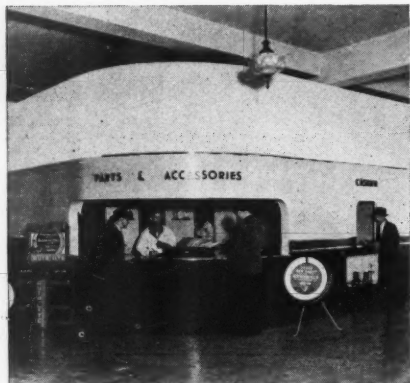
From out of a past of skinned knuckles and smashed fingers, MOTOR AGE has prepared a series of pictures of "Don'ts" for the new mechanic. Don't use pliers on a nut; the jaws bite

into the flats and round off the corners so no wrench will fit the nut. And you can't apply as much turning effort with pliers as you can with the right wrench.



Service customers are made comfortable in this well-lighted waiting room.

Attractive, modernistic decoration of the service floor is indicated in this view of parts and accessories corner.



This is a spacious building across the street from the sales room, taken over and converted

**I**N tune with the new times on automobile row, Seaboard Motors, distributor of De Soto and Plymouth in the Seattle area, recently expanded to a new two-story service building, as trim and swank as any new car sales establishment.

The service department, erstwhile orphan of many an automobile dealership, is now being spotlighted in the center of the stage. At least, that is the case with this firm.

"Time was," says Clyde Johnson, owner and general manager of the distributorship, "that we were content to have the service department pay a mere 60 per cent of the entire overhead. Now our service department must not only meet all our overhead, but make a profit, and it's doing it."

To achieve this new tempo of earnings to take up the slack from the ban on new car sales, and an expected curtailment of supplies of accessories, this firm expanded its service department from an upstairs location to a complete occupation of a two-story building just across the street from its

## SERVICE FOR THE DURATION

**A Seattle dealer prepares to best the storm with a superb new shop**

**By MANDUS E. BRIDSTON**

main plant—an increase from 10,000 to 28,000 square feet.

Though the area increase in itself is significant of the times, the forethought, planning and ingenuity that are embodied in the new department, from the stand-

point of eye-appeal, streamlined equipment and sales approach are even more noteworthy.

This street-level service building, fronting Seattle's main automobile row, is said to be one of the most attractive on the Pacific





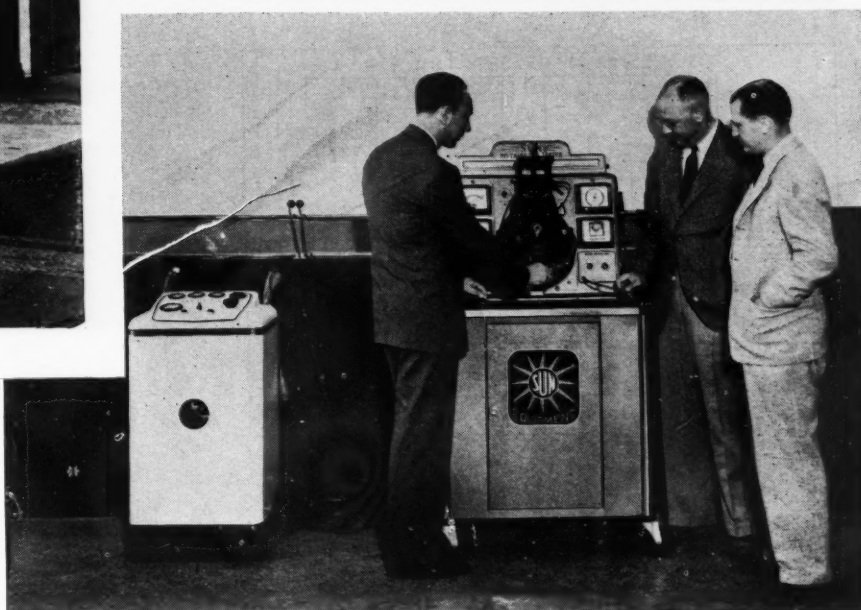
into a complete, up-to-date service shop.

Coast. At any rate, it embodies decorations, arrangements and appointments particularly pertinent at this time when the automobile dealer is looking speculatively at his service department with an eye toward making it do double duty.

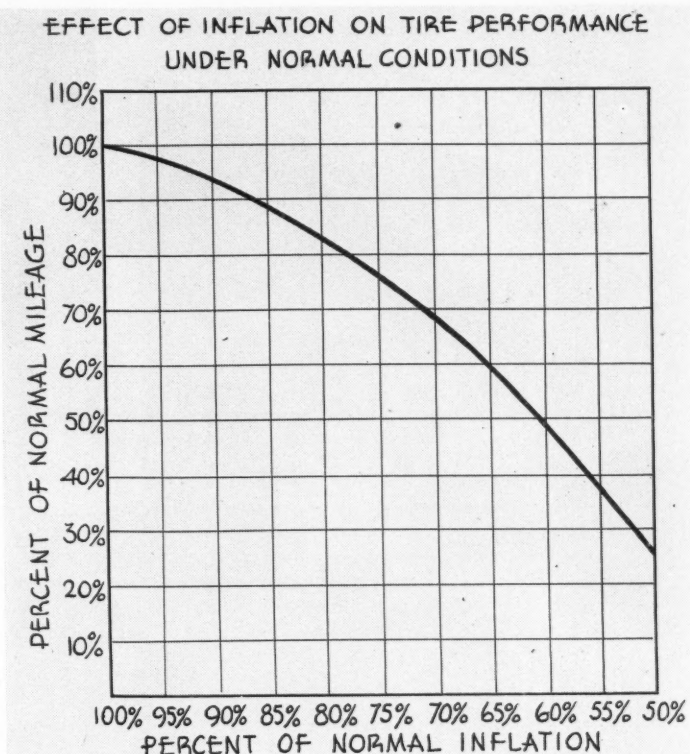
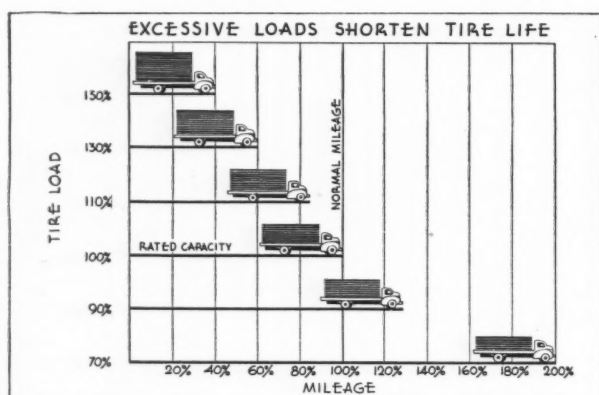
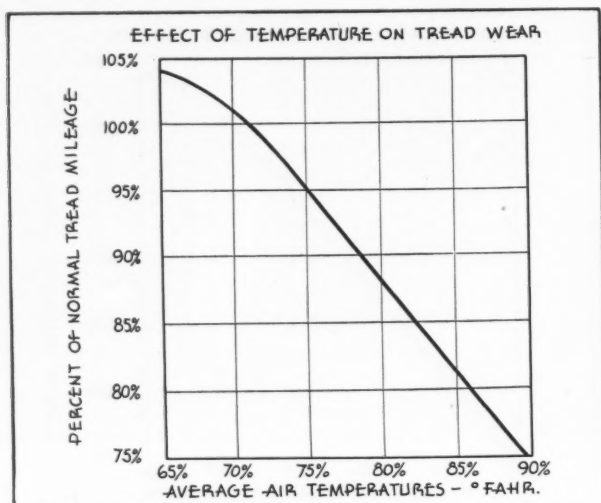
This service building is located on a corner, and, in order to provide a through drive, plate windows on the side street were removed in the building center to make room for a lift door and ramp. The 9,000 square feet of street floor are devoted entirely to quick service—motor tune-up, lubrication and so on, except that the service office is located at the right and toward the rear. This permits a "U" drive-through, both entrance and exit being from the side street. A ramp at the rear, also leading from the side street, extends to the repair shop on the second floor.

Both side street front and main front are plate glass, which gives a complete and unobstructed view of the entire first floor operation. Hence, interior decoration and a

(Continued on Page 52)



Main floor of the service building as seen by the car owner as he drives into the shop. Officials of the company inspect a newly installed motor tester. Left to right, they are: Paul Duff, service manager; Clyde Johnson, president, and Dick Smith, sales manager. A corner of the second floor shop, where major repairs, including body work, are done.



# YOU CAN MAKE TIRES

**Here are the answers to questions your customers will be**

**T**HE success of the entire war effort may rest on the shoulders of the automotive repairman and on his ability to keep the cars rolling with a minimum number of parts and maximum efficiency. The success he has in prolonging tire life is particularly important.

In the past, many repair shops felt that they had done a complete tire-servicing job when they repaired punctures, and their merchandising effort was limited to the display of an old truck tire with a

perfunctory sign—"We fix Flats."

The national emergency makes it imperative that every maintenance man do his utmost to increase tire life and every repair shop should immediately institute "Tire Life Prolonging Service." Such service does not require any selling effort at this time, as car owners realize that the situation is serious and it is their patriotic duty to keep their present tires operating as long as possible. But it is necessary to present the facts so that he will know

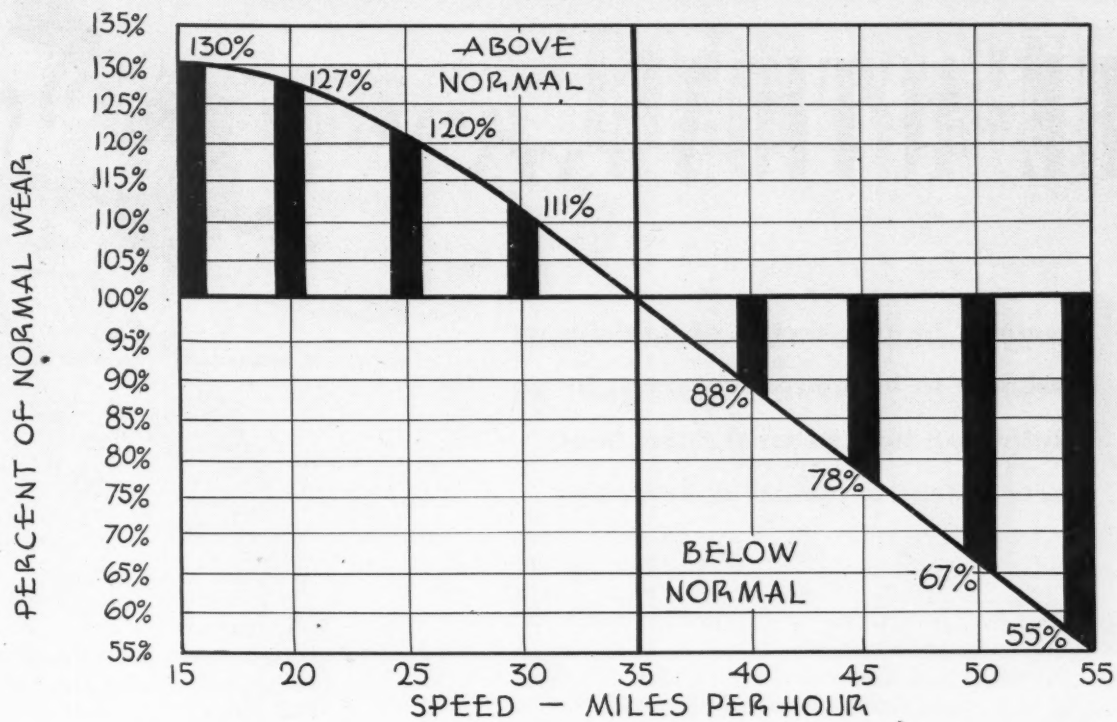
you are prepared to give complete service.

Complete tire-life-prolonging service should include weekly inflation, together with inspection of tire valve and valve cap; monthly inspection for cuts, nails, etc.; check wheel alignment and balance wheels every 5000 miles; check and fill shock absorbers every 5000 miles. Instruct car owner on the effects of speed and underinflation on tire life.

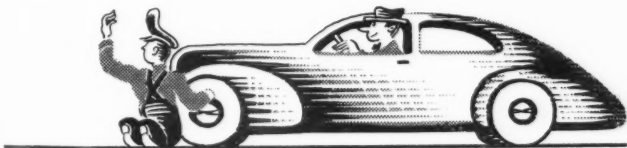
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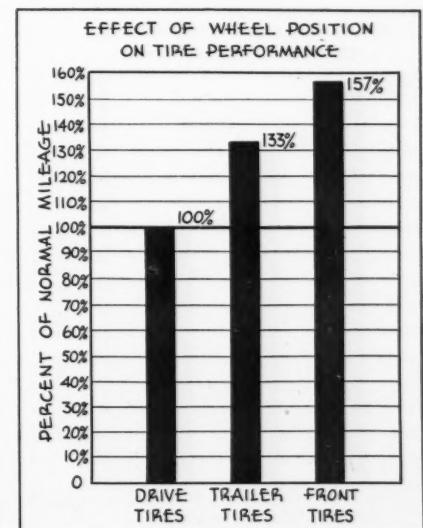
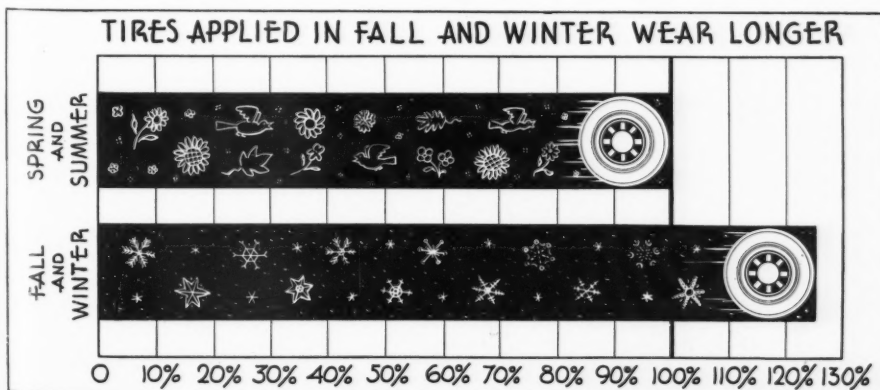
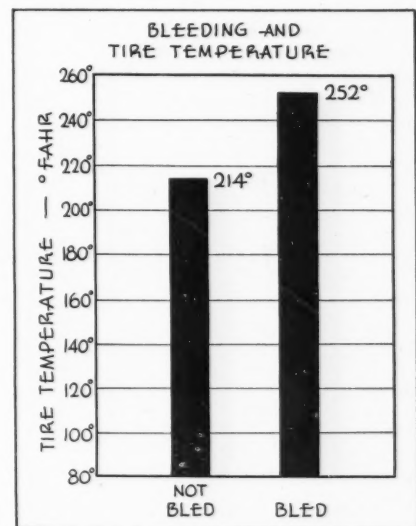
# -HIGHER SPEED MEANS FASTER TREAD WEAR



## LAST LONGER

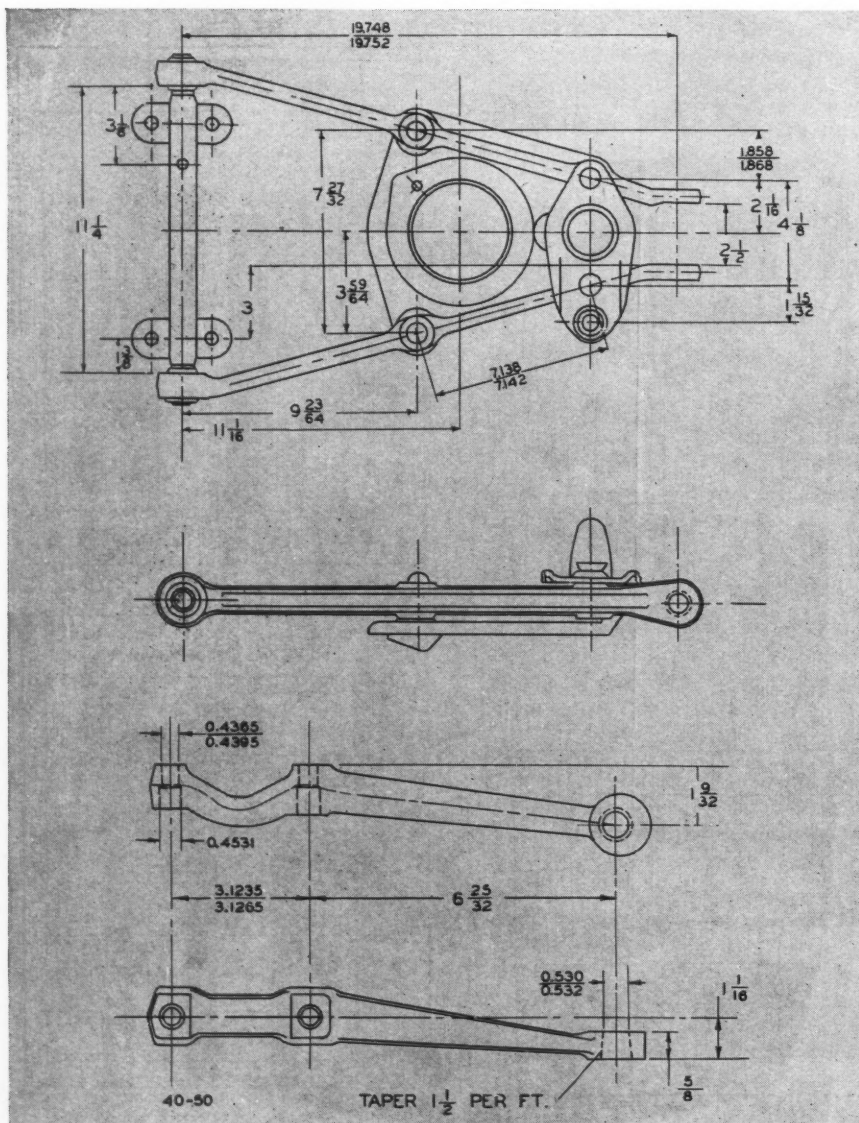


asking about saving rubber



# KNEE ACTION DATA

Another in the series of articles designed to help save materials by explaining how to straighten bent parts instead of installing new ones



**A**N important thing to remember in correcting damage to the front suspension arms is that any straightening operations must be performed *cold*. In the case of the 1942 Buick arms, illustrated on this page, the parts are made of high-carbon alloy steel, heat-treated for toughness to obtain maximum strength. The use of heat in straightening is certain to cause soft spots, at which fatigue and breakage will be likely to occur.

Should it become necessary to remove the lower control arm to correct wreck damage, particular attention should be given to the installation of the front spring. The springs are not interchangeable with the 1941 models. The lower end of the spring does not have the lower coil ground flat. For this reason, the end of the last coil must be positioned in the recess provided in the spring seat. The upper end of the spring fits around a cup which is attached to the frame by the shock absorber bolt. Rubber insulators are used between the frame and the upper end of the spring.

The spring seat, between the side arms of the lower control arm assembly, is riveted to the arms. This plate helps to hold the arms rigid, and, if it becomes necessary to remove the plate by cutting the rivets, it is important that the bolts used to reinstall the plate be a tight fit in the holes of the arms and that the nuts be drawn up tight and permanently secured with lock washers.

Toe-in is particularly important because of its effect upon tire wear, and must be set accurately. In the case of the 1942 Buick, all models, toe-in should be set at from zero to 1/16 in.



# INTERIOR BODY SERVICE



This article, and others in Motor Age, supplements the service information incorporated in the Chilton Body and Frame Manual.

**W**HEN removing the headlining in the 1941 Chrysler-built cars, this procedure should be followed in the order given:

Remove the sun visors.

Remove the windshield center strip.

Remove the windshield garnish molding.

Remove the rear quarter window garnish moldings.

## How to replace the headlining in all 1941 model Chrysler-built cars

Remove the assist cords by prying out the ornamental plug and removing the screw.

Remove the rear window garnish molding.

Remove the rear seat cushions.

Remove the dome light assembly. This is done by prying the bezel off with a screwdriver and removing the screws which hold the light base to the body.

Remove the rear seat back shelf trim panel by removing the fasteners.

Remove the headlining tacks from under the rear window.

Pull the headlining loose around the windows where it is cemented.

Remove the tacks from the headlining under the windshield garnish molding.

Loosen the headlining at the ends of the concealed header board.

Pry out the headlining retaining metal strip with a screwdriver and unhook the lining from the teeth

on the metal strip all around and on both sides of the body, as shown in Fig. 1.

Remove the tacks holding the headlining at the front and rear, as shown in Fig. 2.

Pry out the rubber plugs holding the headlining listing bows, using a screwdriver.

Remove the bows and headlining assembly from the car and remove the bows from the listings.

Before installing the new headlining, tap the sawtooth points of the headlining metal retaining strip into shape with a hammer.

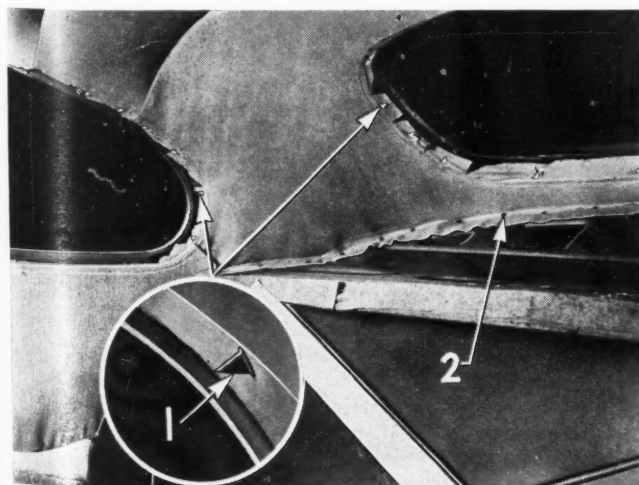
Install the metal bows in the headlining listings.

Install the rear bow with the rubber plugs in the body openings. Clamp the rear bow in place at the center just ahead of the dome light.

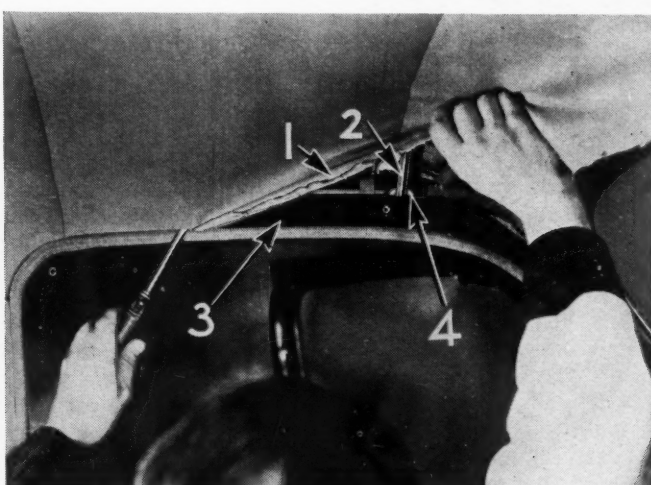
Install the remaining bows with the rubber plugs in the body openings, working from the back to the

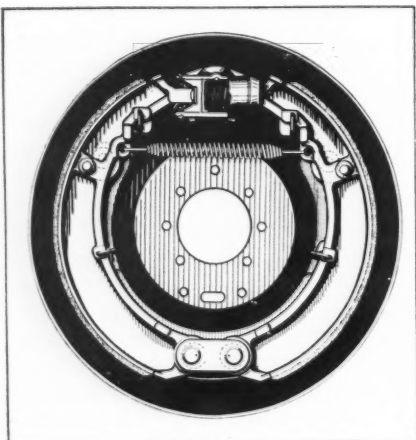
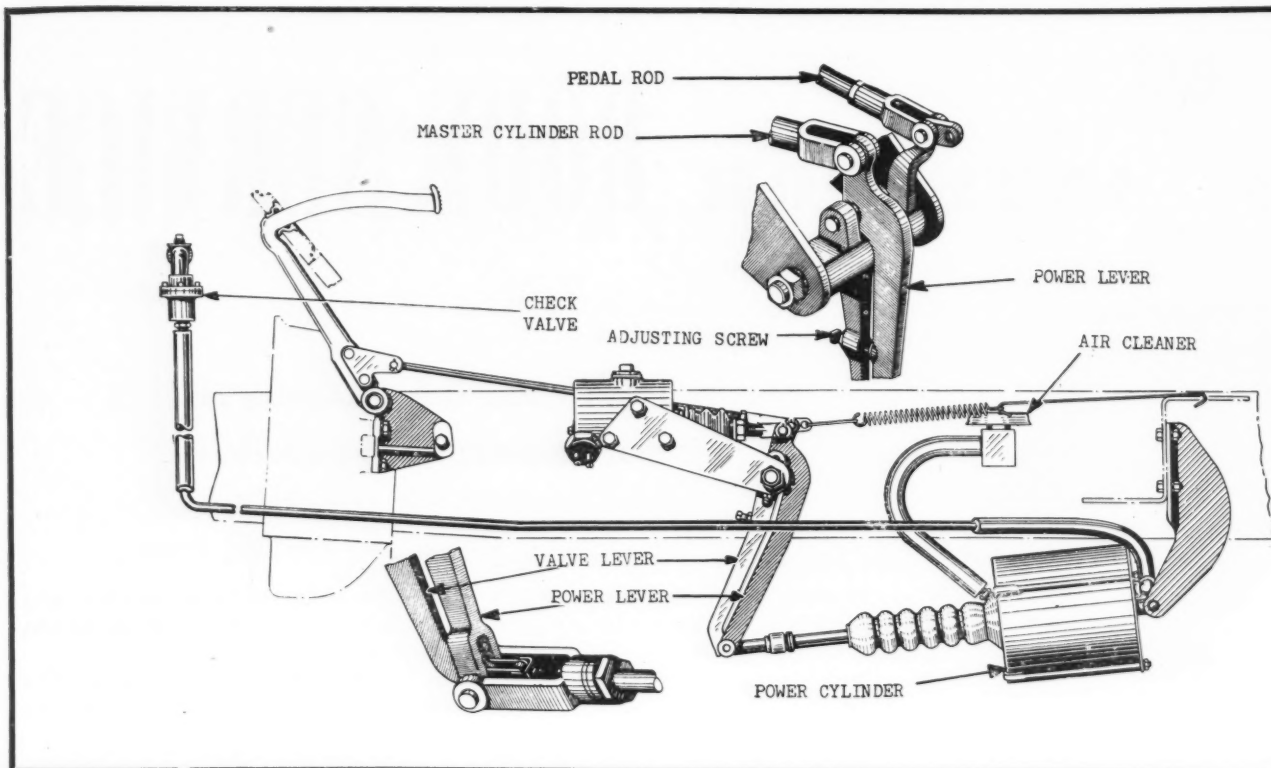
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Remove garnish molding, and work from back toward front. Pull out headlining tacks (2) and unhook headlining from fastening teeth (1).



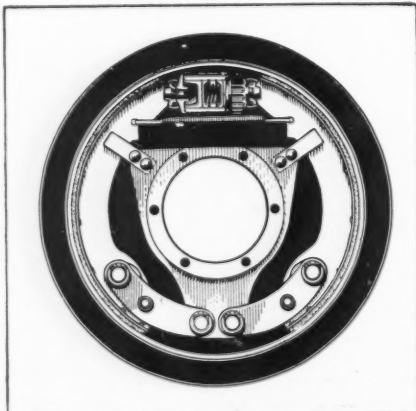
Pry out headlining metal retaining strip (3) and spring listing bow (2) out of grommet (4). Remove lining with listing bows attached.





The front brake shoes are anchored at the lower ends on eccentric pins which can be adjusted to secure proper clearance between lining and drum when centralizing.

The rear brake shoes are connected to the anchor plate through articulating links, but are mounted on separate anchor pins. Adjustment is by pinion screw through back.



## TRUCKS WITH



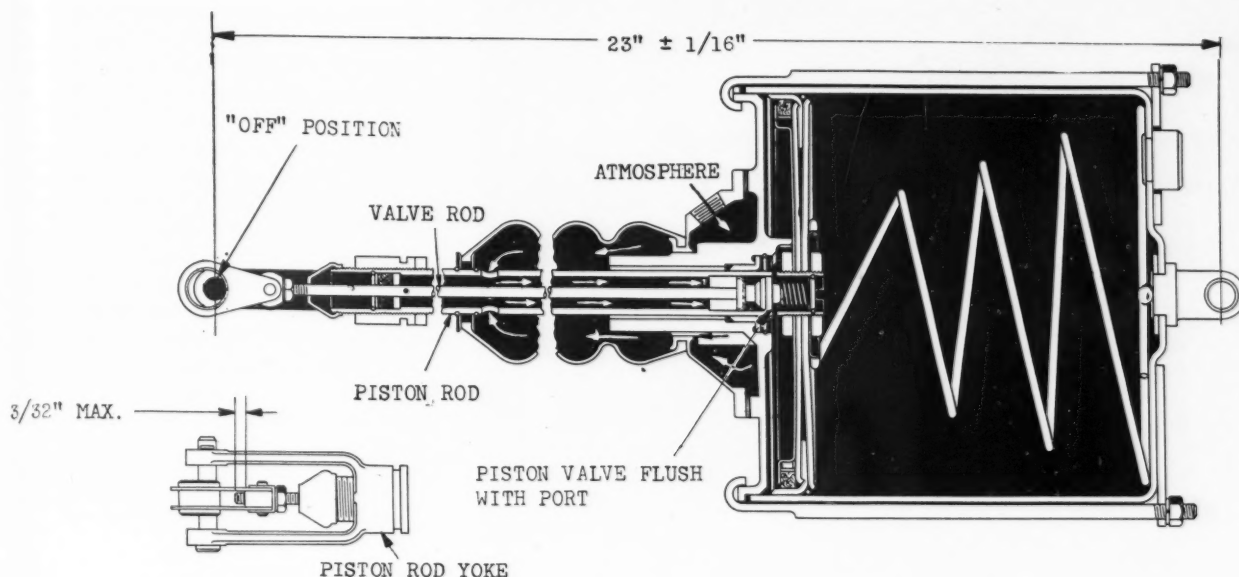
**T**HE factors which apply to good brake adjustment for passenger cars apply also to truck brakes. In addition, there are many cases in which vacuum power cylinders are added to the hydraulic system to give extra braking power to the shoes without added pedal pressure. Such an installation is found on the GMC Series 400 and 450.

The power cylinder in this case is known as the vacuum suspended type—in other words, vacuum exists on both sides of the power

cylinder piston when the brakes are in the "off" position. When the brakes are applied, air at atmospheric pressure is admitted to one side of the piston, causing the piston to travel toward the end of the cylinder in which the vacuum exists. The piston rod is connected to the master-cylinder power lever, and this aids in the application of pressure within the hydraulic master cylinder.

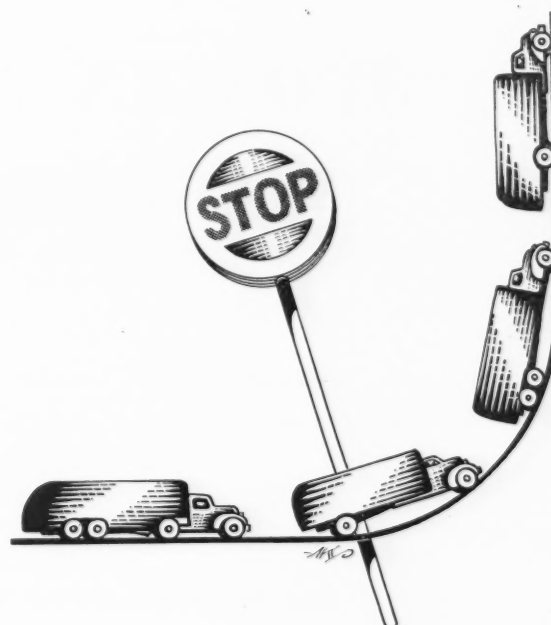
In addition to the brake-shoe adjustments at the wheels, and the adjustment of the travel of the





# POWER BRAKES

**When a hydraulic system is aided by power-cylinder application, action must be coordinated by adjustments**



master-cylinder piston rod, the power cylinder linkage must be properly adjusted so that it will come into service at the proper time to supply the major power for applying the brakes. As shown in the illustration, the hook-up immediately in back of the hydraulic cylinder consists of two levers—a valve lever and a power lever. Both these levers pivot on the same shaft. The valve lever is connected at its upper end to pull rod running from the brake pedal, and the first part of the travel of this lever is to oper-

ate the power cylinder valve which is connected to the lower end of the lever.

After the valve lever has traveled this predetermined distance, it picks up the power lever by means of a pin operating in a slot in the upper end of the power lever. By the time this pick-up has taken place in the slot in the power lever, the power-cylinder piston has started its travel due to the valve having admitted air to the cylinder. Then the power cylinder, plus the foot pedal pressure, applies the

braking effort to the master-cylinder piston.

The main point of adjustment, as far as the power cylinder is concerned, is the linkage adjustment so as to get the power cylinder to operate at the proper time.

The first point to check in making this adjustment is to see that the adjusting screw in the valve lever is backed off so that it does not touch the power lever. With the brake pedal back against its stop, connect the power cylinder (Continued on page 49)



## WOMEN AND VICTORY

**As customers and workers, women  
are ready to help the serviceman**

**By ROSE LU GOLDMAN**

**"B**USINESS this year shows a decided increase."

"We're turning cars away—we can't handle all that come to us for service."

"There are fewer complaints about repair prices and delays than ever before."

That's the song the automotive service industry is singing today, and, believe me, that's no dirge. What with one thing and another, the sledding may get tough later

on, but, if it does, that will be the price we will have to pay for victory. And, after it's all over, the indications are that the automotive service industry will be decidedly benefited.

The happy words to this cheerful song we're singing are being written and will continue to be written, largely by women. Women are proving every day that they can, if given the proper training, be excellent assets to the industry, both

as workers and buyers of service.

To the Sun Oil Co. (and many of its dealers and their clients) women are proving themselves fine service-station attendants—well worth the time and expense it may take to train them. (See *MOTOR AGE* for October 1941). These attractive young women are not only doing driveway selling, service-station office work, and follow-up details, but inventories and window displays as well. They're proving that they can work side by side and harmoniously with the men, and that customers not only like their attractive appearance, and friendly manner, but also approve the quick, neat, and efficient service they render.

It is almost impossible to get any exact figures on the sales results of these girl operators but a survey over a four-months' period of 1941 against the same period for 1940 shows that sales not only held equal, but that returns were more than satisfactory, and all this in spite of the considerably fewer hours the station is now open.

For further indication of the financial success of these girl operators, one need only look at the fact that the Sun Oil Co. has opened better than a station a month (which is just about as fast as the girls can be selected, trained and outfitted) since we last spoke with them, and their girls are now working in Detroit, Pittsburgh, Syracuse, and two suburbs of Philadelphia. What started out to be an experiment to help dealers meet emergency conditions has proved to be a smart merchandising asset. There is no doubt that women can sell service.

This is only one side of the business, however—the sales side. Now let's look at the customer angle and see what women have done to make that outlook brighter.

Reverberations are already being felt from the motor-mechanics courses so many thousands of women are now taking. In these courses, they learn the principles of both operation and repair of the automobile engine. In addition, and more important to us, they're gaining an understanding of the problems faced by the service man. It's a missionary job that would be almost impossible to accomplish in any other way. Service managers report that women trained in these courses are more alert to car needs, more cooperative about the time required for repairs, and less complaining of prices.

(Continued on page 49)





"I'd like to have my India rubber men retreaded."



# SUPER SERVICE

## IN NEW YORK

**A tire shop, by broadening its field to give complete service, scores a spectacular success**



**I**T is a little puzzling at first to see a thoroughly modern super service station on Tenth Avenue in New York City topped by a sign that says Eagle Tire Company. Actually the station and its sign point to the advantages a super service shop holds over a specialty shop.

The Eagle Tire Company is eighteen years old and for thirteen years it was devoted entirely to the sale and service of tires and tubes. As a tire shop, it was extremely successful. It became, in fact, one of the largest operations of its kind in Manhattan and opened branches in Union City, Passaic, and Hackensack, N. J.

Gradually it became apparent that a close connection existed between tire service and certain types of mechanical service, particularly front-end work and brakes. Many customers were buying new tires simply because bad brakes or misaligned front ends had worn out the old tires before their time. Such customers could have been sold corrective service without the slightest trouble.

In 1936, the company transformed its shop into a super service station, offering virtually every type of service on a 24-hour basis. Island pumps were placed out

At upper left, an interior view of the shop, showing the front-end, tune-up and brake departments. Upper right, exterior view showing the drive-in gas pumps and the easily accessible service bays.





front and a wide line of accessories were displayed in a large show window. All the service bays opened directly on the concrete apron next to the side walk.

As expected, the front-end and brake business benefited most from the contacts made with tire customers. Customers were easily convinced that realignment of the front wheels and equalized brakes would reduce tire wear.

The degree to which the other departments benefited varied. Besides front-end and brake service, the shop serviced batteries, straightened frames, straightened and repaired bodies, and offered lubrication, ignition and carburetor service, and motor tune-up. Of these, only ignition work failed to dovetail with the set-up.

Because the company began as a tire shop and gained such a wide reputation in that field, the bulk of its income still is derived from tire sales and service. Still the growth of the mechanical service volume has been highly gratifying. At present it amounts to about \$4,000 a month, including both parts and labor. That is about a fifth of the retail tire volume and the net from these departments is equal to the overhead costs of the entire operation.



Right, testing batteries on the charging line. Battery and ignition service has an important place in the set-up. Above right, removing a wheel in the brake department. This department dovetails with tire sales.

# NEW profit makers

## PARTS TOOLS EQUIPMENT ACCESSORIES

### Muffler Display Rack

A new and unusual muffler and tail-pipe display rack is being distributed to its dealers by Maremont Automotive Products, Inc., 17th St. and S. Ashland Ave., Chicago, Ill. The rack is mounted on rollers which make it easily portable so that it can be rolled out in the morning and back in at night without removing the products from the rack. It combines an attractive display medium with facilities for stocking 12 mufflers and 6 tail pipes.

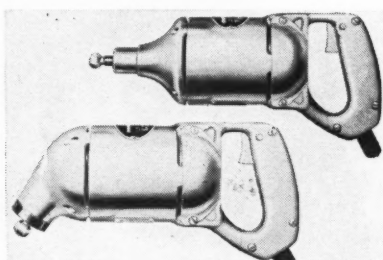


### Foreman Announces New Charger

A new, compact and easily portable fast battery charger featuring a direct connected motor-generator set is announced by W. D. Foreman, 5359 South State St., Chicago, Ill. The standard model is fitted with a time switch and ammeter, while optional equipment includes an analyzing volt meter and a high resistance breakdown tester. An extra-large generator supplies natural charging current, and is said to be capable of supplying a full charge in 40 minutes. The entire unit is mounted on a two-wheel, rubber-tired chassis so

that it can be easily rolled to different points in the shop.

### Valve Seat Grinders



The Van Dorn Electrical Tool Co., Towson, Md., has announced two new models of "Vibro-Centric" valve seat grinders. Although unchanged in principle, the new models are redesigned for more power and more compact construction. One of the models is a 55 deg. angle grinder, which has been added to the standard line, having proved its worth in the heavy duty field.

### Wheel-Balancing Weights for Trucks

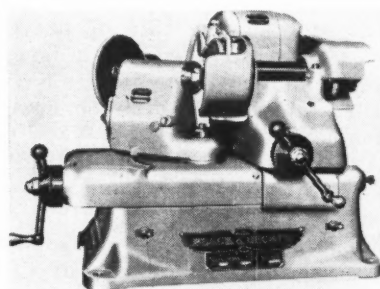
A line of wheel-balancing weights for all sizes and types of truck wheels has been announced by The Harley C. Loney Co., 16883 Wyoming Ave., Detroit, Mich. These new weights are made in seven different shapes or contours to meet all variations of curvature as well as in the thickness of the rim flange. Each weight is graduated in ounces, having division lines so that it may be cut down to any number of ounces desired.



### New Model Valve Refacer

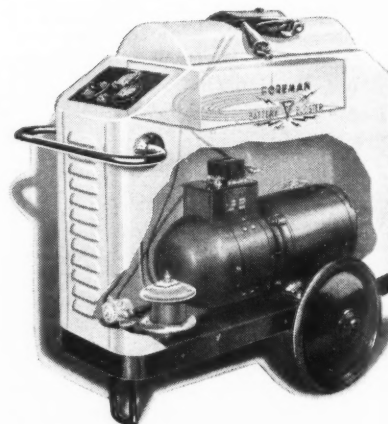
Black & Decker Mfg. Co., Towson, Md., has developed a new model of its valve refacer, incorporating new improvements to increase the range

of work. A lower base improves visibility for bench mounting, and the new wheel mounting is more accessible for adjustment. The improved model is available in either dry-grinding or wet-grinding style. Provision is made for the use of the micrometer valve stem grinding attachment, rocker arm or breaker point grinding attachments.



### Charger Has New Features

New features have been added to the fast battery charger made by W. D. Foreman, 5359 South State St., Chicago, Ill. A built-in compartment

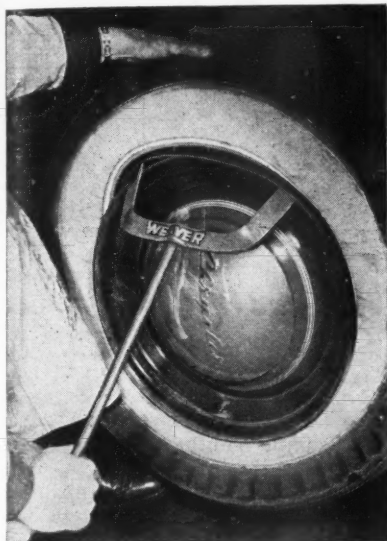


at the top provides space for carrying the connecting cables and extension cord. All instruments are mounted on an attractive panel, and the entire unit is finished in chrome plate and white enamel with blue trim. Optional equipment includes an analyzing volt meter and a high resistance breakdown tester.



## New Tire Iron

The Weaver Mfg. Co., Springfield, Ill., has introduced a new tire-removing tool which is fork-shaped, and



consists essentially of two tire irons with a single handle. It is claimed that, with the use of this tool, the mechanic can see the tube during the removal of the casing, and thereby is protected against pinching the tube with the iron.

## Frost Shield For Curved Windows

To meet the demand for a frost shield that will fit the curved rear windows of present model cars, Durkee-Atwood Co., Minneapolis, Minn., has announced a new non-inflammable plastic shield. The manufacturer claims that they are free of distortion, and are moisture-proof. A new type of "Z" gasket holds the shield in place, close to the glass. Frost shields of this new plastic material are also available for side windows.

## Tire Lock

A new tire lock, made by Ivano, Inc., 123 East 21st St., Chicago, Ill., is now available to the public through



leading hardware stores and automotive supply jobbers. As illustrated, a metal flange fits under the retaining stud nut; the body of the lock covers the nut, and the lock proper engages the metal flange. This new lock is supplied in sets of four, each operated by the same key, at a list price of \$6.00. A set of five locks carries a list price of \$7.50. Two keys are included with the set, and all locks are registered so that new keys are obtainable.

## Upholstery Cleaner

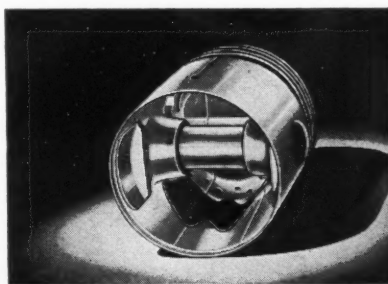
The Magnus Chemical Co., Inc., Garwood, N. J., announces So-O-Kle-N, a new shampoo and cleaner for auto-



mobile upholstery. It contains an ingredient which tends to brighten automobile upholstery without removing its color, and leaves the car with a nice, clean odor. The manufacturer states that this product is not harmful or hard on the hands of the worker. So-O-Kle-N is packaged in cases containing four 1-gal. bottles.

## Piston Expanders

Master Recams, manufactured by the Wherry Engineering Co., 3231 Morganford Rd., St. Louis, Mo., are

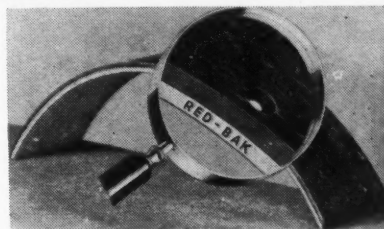


designed to stop piston slap, motor noise and prevent excessive oil consumption. They are made of special design, of high-grade spring steel, and are designed individually for cast-iron and aluminum pistons. Installation is made on the piston pin or piston-pin boss with special installation pliers. Bulletin listing the complete line of

Master Recams, and prices, will be sent upon request.

## Brake Lining Has Own Warning Signal

Johns-Manville Corp., 22 East 40th St., New York City, has announced



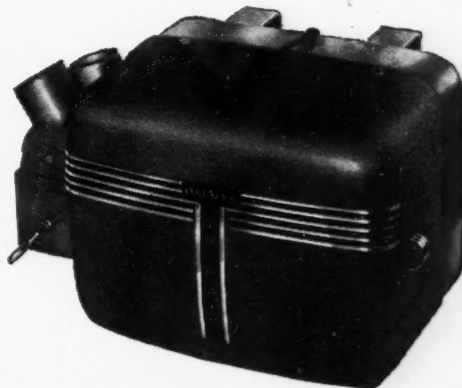
a new molded brake lining with red backing. When the lining is so worn that the red backing shows, it is an indication that the lining should be replaced. The new lining will be supplied in the 4-Star and Standard lines. A complete promotional program for jobbers and dealers for merchandising Red-Bak lining will soon be announced.

## Oil Filter Display Stand

One of the latest dealer sale helps developed by DeLuxe Products Corp., La Porte, Ind., is a metal display stand. The stand is 20 in. high, pictures a smiling Uncle Sam, with the message "Best Defense Against Waste of Oil and Money," and has space for holding a deluxe oil filter cartridge. There is a pocket for literature, and a cut-away view of the deluxe filter.

## Heaters for Chrysler-Built Cars

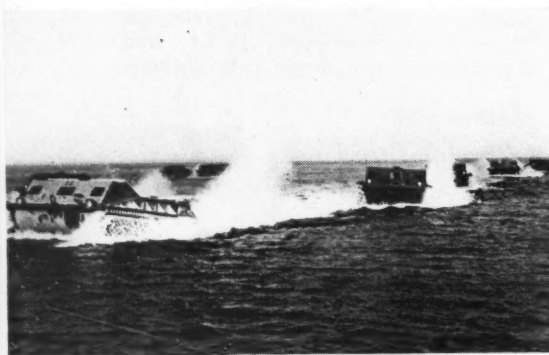
Two new heaters, designed especially for installation in Chrysler, De Soto, Dodge and Plymouth cars, have been announced by E. A. Laboratories, 696 Myrtle Ave., Brooklyn, N. Y. These heaters fit knock-outs provided in the cowl panel by the manufacturer, so installation is greatly simplified. Both are designed to connect neatly and quickly with standard heater controls on the instrument panels. An 11-segment motor and quiet fan are features of both models, the Twin Air and the Super-Power, and both have defroster outlets.





**BLACKOUT.** The country's best known automobile row, otherwise Broadway near Columbus Circle, where new-car activities have been blacked out by ban on making new cars.

**SEAGOING TANKS.** Amphibian tanks built for the Marines plow through Gulf of Mexico waters off Dunedin, Fla. Each tank carries 24 men besides the crew of three.



**SAFE LIGHT.** Blackout shield, developed by Department of Justice for blackouts, being installed on Washington, D. C., car. Right, attaching a parking-light shield at San Francisco.



# NEWS

## PARTS STOCKS

ONE of the most talked-about questions among servicemen today is that of parts and equipment. The OPM has several times issued assurances that a supply of replacement parts would be maintained and has taken a step toward implementing this pledge by giving repair parts for passenger cars and light trucks an A-10 priority rating. Yet numerous servicemen have had a hard time getting certain parts, particularly body parts, gaskets, fan belts, and spark plugs. This situation has led naturally to some uneasiness about the immediate future.

It is impossible to determine, short of a nation-wide survey, exactly how many parts are stored on jobbers' shelves, yet some figures just released seem to indicate that the stocks are considerable and that the danger of shortages, except in the case of certain items, is not immediate.

The figures in question represent the shipment by MEMA members to jobbers of replacement parts, accessories and service equipment. During 1941, monthly shipments of all three

classes of material were far above the corresponding months for the previous three years.

In November, 1941, for example, these manufacturers shipped to jobbers 48 per cent more replacement parts than during the same year of 1940. For accessories, the increase was only 39 per cent, but for service equipment the increase was 85 per cent. The percentage of increase varied somewhat in the earlier months of 1941, but the average for 11 months was far ahead of the average for 1940.

Service business was up sharply last year and unquestionably far larger quantities of replacement parts and accessories went into this repair work. In the case of equipment, many automobile dealers were equipping shops for a larger volume of service business to offset the decrease in sales. Still, the best estimates available do not put the increase in service business at much more than 20 to 25 per cent. during 1941. Some observers are wondering whether the parts, accessories and equipment bought by jobbers in excess of their actual sales to service shops went into stock.

**PARTS FOR WAR.** Inspecting machine guns, left, at the Brown-Lipe-Chapin Division, Syracuse, N. Y. Right, checking side plates of machine guns. The plant formerly made automobile parts.



## DETROIT LETTER

By ED WARNER

That is all to the good for the serviceman. If the day comes when the demands of the military for metals and other materials force curtailment of parts manufacture, it is hoped that jobbers' stocks will meet demands for a considerable time.

### OIL SALVAGE

WITH an eye to operation far from bases, the Army has developed its own method of reclaiming crankcase oil. The Quartermaster Corps recently announced the successful test of a mobile unit that has a capacity of about 200 gallons a day.

The first step in reclaiming the oil is to dump it into a 100-gallon vat where it is mixed with Fuller's earth. The mixture is then drawn off into a retort tank and heated to 650 degrees. Gasoline, water and other liquid impurities vaporize at this heat and are drawn off.

The oil is run through 50 feet of coils to cool and is then returned to a contact tank. Cooled to 325 degrees, it goes into a filter press to separate the Fuller's earth. Viscosity of the recovered oil varied according to the

Keeping the nation's 33,700,000 motor cars and trucks in operating condition may become increasingly more difficult as the rubber shortage and priorities on necessary metals complicate the picture for the service business. On the brighter side, however, is the setting of a limitation on manufacture of replacement parts for passenger cars and light trucks for the first six months of 1942 equal to 150 per cent of the total quantity of parts produced in the entire 12 months of 1941. This establishes the going rate on parts production from January through June at three times the 1941 production rate and should help assure the operation of the nation's transportation pool, which now

type of crankcase oil treated, but the average has been found to be around SAE 30. Loss during treatment is about 20 per cent.

### CONVERSION

IN the epochal shake-up of the war effort, which abolished the OPM, the gigantic task of converting the

has only the vehicles "frozen" in dealer's stocks to fall back upon when present vehicles wear out.

Conversion of the automobile plants to war production will create a problem in the manufacture of replacement parts by those companies. Most of the companies have been turning out as many parts as possible within quota limits in order to build up their stock banks. If machinery is rearranged or displaced during the changeover to war production, to meet certain replacement needs would prove a real problem. However, many replacement parts are made by independent manufacturers outside the automobile manufacturing industry.

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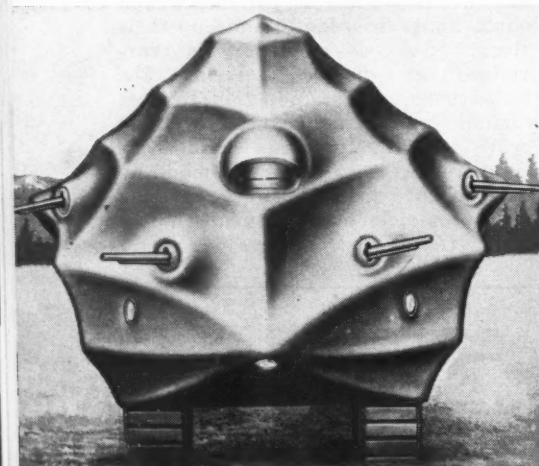
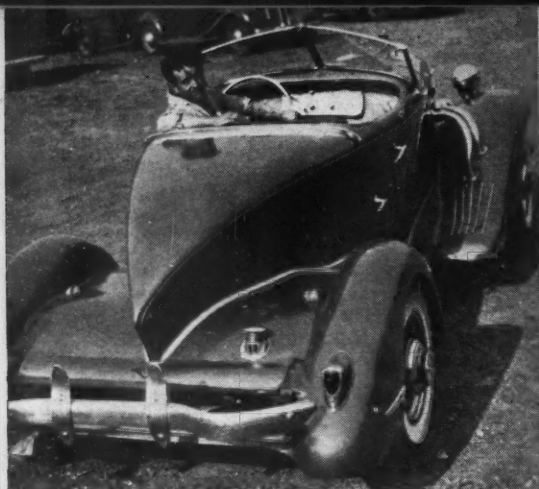
automobile plants of the country to arms production was assigned by Donald M. Nelson, war production chief, to an automobile man, Ernest C. Kanzler. Another important post, that of materials chief, was given William L. Batt, who as head of SKF Industries formerly played an important automotive role.

**RUBBER SHRUB.** The boy holds a guayule shrub, grown in Salinas Valley, Cal. Originally from Mexico, the plant is expected to be grown extensively here during war to help relieve rubber shortage.



**NEW FROM OLD.** Workman at the Goodyear plant, Akron, feeds worn-out tires into a grinding machine, after which the reclaimed rubber will be fashioned into new products, including tires.





James S. Knowlson, president of the Stewart-Warner Corp., has been named chief of industry operations.

Despite his long association with the automobile industry, Kanzler was not widely known until he was named chief of the OPM automotive division on Jan. 5. Reportedly it was he who made the decision to ban passenger-car production after Feb. 1.

He had been connected with the Ford Motor Co., since 1916. Born in 1892, he is a graduate of the University of Michigan and of the Harvard Law School. He was at one time production director for Ford, and at present is on leave from the Universal Credit Co., of which he was president. His wife is a sister of Edsel Ford's wife.

**16 IN 1.** Streamlined car built by Edward Padden in his Woodside, N. Y., shop with parts from 16 dismantled automobiles. Frame and engine came from an old Auburn.

**EVENING DRESS.** New York family models white-accented apparel favored for wear during blackouts. Scheme extends to the car,

**FUTURISTIC TANK.** Designed by Cleveland W. Cole, who asserts sloping sides would deflect enemy shells. It carries eight guns.

## RETAIL PRICES

**O**PPPOSITION to price control, except in cases of extreme scarcity, was expressed in a study recently reported to Price Administrator Leon Henderson by the Retailers' Advisory Committee. Arguments advanced by the committee in support of its stand make interesting reading for every retailer.

Retailers themselves, the report pointed out, are a decided check on runaway prices. Food prices at retail, according to the report, increased only 19.2 per cent between June 1939 and January 1942, whereas wholesale prices rose 31.5 per cent in the same period, and prices paid farmers increased 56.2 per cent.

These facts were offered as evidence that retailers can exert self-controls and led the committee to suggest, as an alternative to price-fixing, a three-point voluntary program:

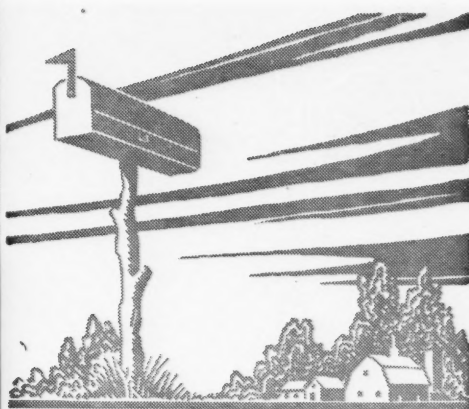
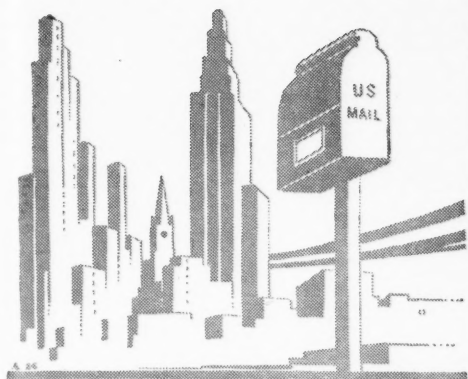
1. Extend and encourage self-controls.
2. Expand supplies by all available methods.
3. Seek a reasonable balancing area for the national economy, in which, through general government policy, the existing price levels would be preserved.

Instead of applying ceilings to  
(Continued on page 71)

## November New Passenger Car Registrations

	NOVEMBER	OCTOBER	NOVEMBER	ELEVEN MONTHS		Per Cent	Per Cent of Total		TWO MONTHS MODEL YEAR		
	1941	1941	1940	1941	1940	Change, 11 Months, 1941 over 1940	1941	1940	1941	1940	Per Cent Change
Chevrolet.....	35,794	40,243	72,011	845,186	764,533	+ 10.5	23.76	24.81	76,037	143,700	- 47.1
Ford.....	26,690	24,670	48,412	574,990	489,935	+ 17.4	16.16	15.90	51,360	90,173	- 43.1
Plymouth.....	17,187	21,052	37,452	432,312	402,472	+ 7.4	12.15	13.06	38,239	78,969	- 51.6
Buick.....	14,917	10,588	27,951	291,867	266,755	+ 9.4	8.21	8.66	25,505	60,234	- 59.7
Pontiac.....	13,338	12,054	23,817	271,462	210,672	+ 28.8	7.63	6.84	25,392	46,393	- 45.3
Oldsmobile.....	10,980	7,832	19,887	218,907	179,516	+ 21.9	6.15	5.83	18,812	38,514	- 51.2
Dodge.....	9,647	10,455	15,785	204,973	179,868	+ 14.1	5.76	5.83	20,102	28,058	- 22.9
Chrysler.....	5,458	5,912	8,702	137,466	88,696	+ 54.9	3.86	2.88	11,370	16,188	- 29.8
Studebaker.....	5,696	6,194	8,057	107,284	93,534	+ 14.7	3.02	3.04	11,890	18,170	- 34.6
DeSoto.....	3,898	4,450	6,102	87,140	64,946	+ 34.2	2.45	2.11	8,348	10,922	- 23.6
Mercury.....	4,435	3,395	6,996	77,486	72,573	+ 6.8	2.18	2.36	7,830	11,755	- 33.4
Nash.....	3,215	3,398	4,427	74,205	46,689	+ 58.9	2.09	1.52	6,613	8,961	- 5.0
Hudson.....	3,152	4,149	6,058	69,366	73,752	- 5.9	1.95	2.39	7,301	14,102	- 48.2
Packard.....	4,773	6,082	5,813	65,029	68,116	- 4.5	1.83	2.21	10,855	12,859	- 15.6
Cadillac.....	3,545	2,725	4,546	56,956	33,204	+ 71.5	1.60	1.08	6,273	8,619	- 26.4
Willis-American.....	733	1,135	1,783	21,140	19,773	+ 6.9	.59	.64	1,868	3,201	- 41.6
Lincoln.....	1,098	969	1,787	17,515	19,187	- 8.7	.49	.62	2,067	3,646	- 43.3
Crosley.....	72	136	31	1,030	400	+157.5	.04	.01	208	79	+163.3
Graham.....	8	12	180	539	1,706	- 68.4	.02	.06	20	381	- 94.8
Bantam.....	4	5	29	129	774	- 83.3	.02	.02	9	73	- 87.7
Miscellaneous.....	107	26	602	2,016	4,115	- 51.0	.06	.13	133	1,028	- 87.1
<b>Total.....</b>	<b>164,747</b>	<b>165,485</b>	<b>301,430</b>	<b>3,556,978</b>	<b>3,081,016</b>	<b>+ 15.4</b>	<b>100.00</b>	<b>100.00</b>	<b>330,232</b>	<b>591,925</b>	<b>- 44.2</b>
<b>Chrysler Corp.....</b>	<b>36,190</b>	<b>41,869</b>	<b>69,441</b>	<b>861,891</b>	<b>735,782</b>	<b>+ 17.1</b>	<b>24.23</b>	<b>23.88</b>	<b>78,059</b>	<b>132,137</b>	<b>- 40.9</b>
<b>Ford.....</b>	<b>78,574</b>	<b>29,034</b>	<b>57,195</b>	<b>869,991</b>	<b>581,695</b>	<b>+ 15.2</b>	<b>18.84</b>	<b>18.88</b>	<b>107,808</b>	<b>105,574</b>	<b>+ 1.9</b>
<b>General Motors Corp.....</b>	<b>32,223</b>	<b>73,445</b>	<b>148,214</b>	<b>1,684,378</b>	<b>1,454,680</b>	<b>+ 15.8</b>	<b>47.35</b>	<b>47.21</b>	<b>105,668</b>	<b>297,360</b>	<b>- 64.5</b>
<b>All Others.....</b>	<b>17,760</b>	<b>21,137</b>	<b>26,980</b>	<b>340,718</b>	<b>308,859</b>	<b>+ 10.3</b>	<b>9.58</b>	<b>10.03</b>	<b>38,897</b>	<b>56,854</b>	<b>- 31.6</b>





Bill Toboldt, Editor, Motor Age

## THE READERS'

# CLEARING HOUSE

## of Servicemen's Queries

### ENGINE STALLS IN TRAFFIC

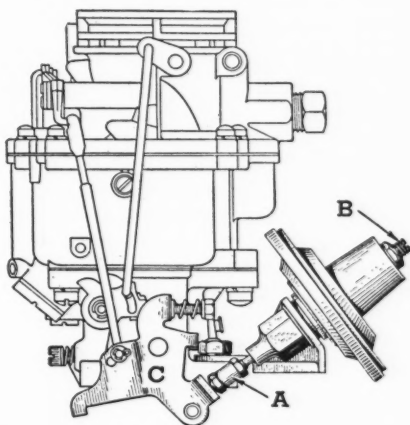
Can you help me out with some trouble we are having with a 1940 Super Eight Packard equipped with the Econo-Drive?

The engine of this car stalls frequently when driving in slow traffic. Running along between 10 and 15 m.p.h., the engine will stall just as though it was out of gas. It is almost certain to stall every time you stop for a traffic light.

We have checked this engine over carefully, and have done practically everything we can think of to correct the normal causes of engine stalling, but none of the corrections we have made has been effective. Will appreciate any help you can give. A Massachusetts Subscriber.

I THINK your trouble can be traced to the adjustment of the throttle guard device which operates on the throttle lever at the carburetor.

The guard is of basically the same construction as the distributor vacuum advance mechanism, and is operated by manifold vacuum. It is correctly adjusted when it "cuts in" at 4 m.p.h. car speed, and "kicks out" or becomes inoperative at a car speed of approximately 9 m.p.h.



Adjustment procedure is as follows: Engine must be properly tuned, and the carburetor stop-screw adjusted to give 6 m.p.h. car speed on a level road. Referring to the illustration, the gap between the end of the diaphragm rod "A" and the carburetor throttle lever should be approximately .020 in. The screw "B" governs the spring tension, and it should be turned in until the distance from the top of the lock-nut to the end of the screw is approximately  $7/32$  in.

Final adjustment is to be made on the road, with the lock-out knob

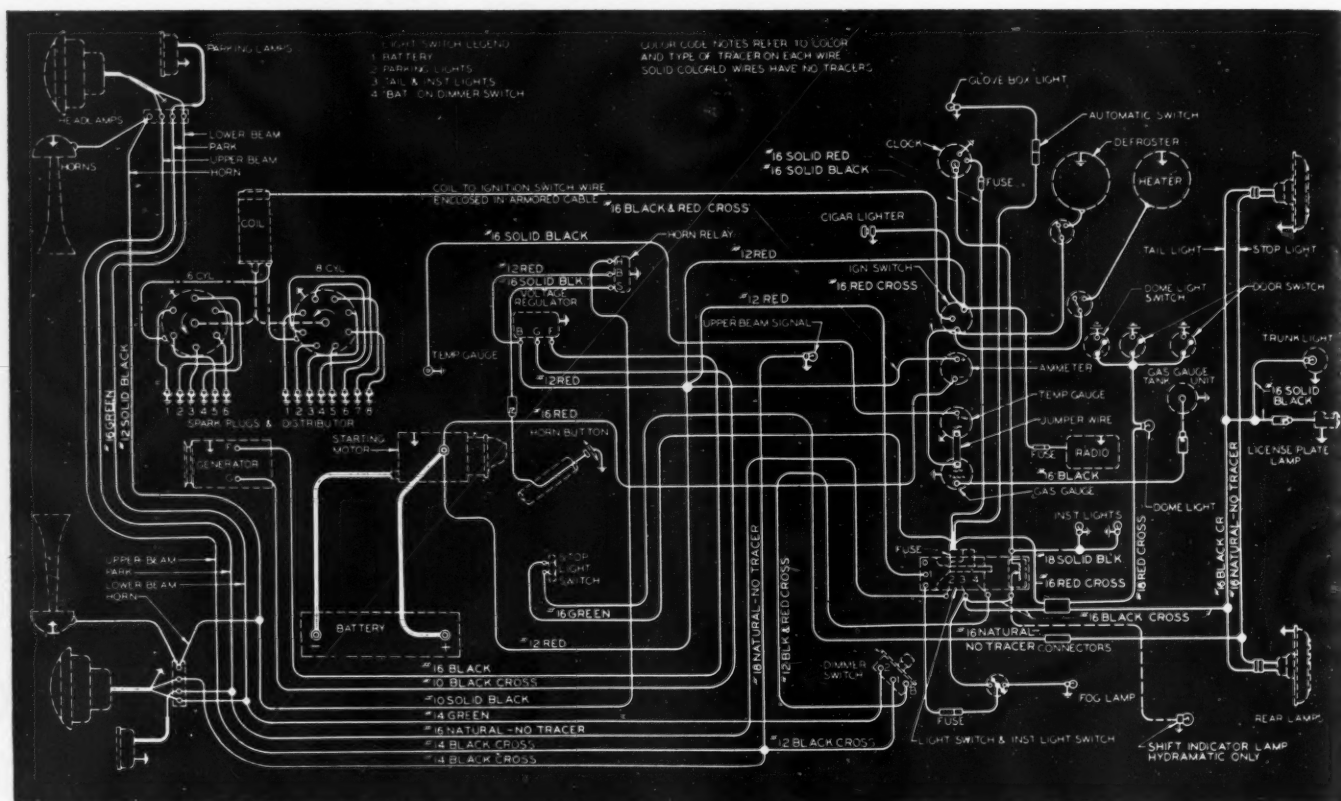
pushed all the way in to the instrument panel, and the gearshift lever in the high gear position. Pull the car down to 4 m.p.h. slowly with the brakes and without pressure on the accelerator pedal. When the 4 m.p.h. speed is reached, the throttle guard should "cut in" and temporarily bring the car speed up to 9 m.p.h., then kick out.

While you are braking the car with your foot, watch the accelerator pedal. It will move down slightly when the throttle guard cuts in, and you can then determine whether the unit is operating at the proper car speed.

If the kick-out occurs at a speed above the 9 m.p.h., increase the gap between the diaphragm rod "A" and the throttle lever; if it kicks out below 9 m.p.h., decrease the gap. If the unit cuts in above 4 m.p.h., turn the screw "B" out slightly; if it does not cut in until the car speed is below 4 m.p.h., turn the screw "B" in slightly.

### HIGHER COMPRESSION

One of our customers has a 1941 Studebaker Champion, and he wants me to increase the compression ratio, as he believes it will give better gasoline mileage.



## Wiring diagram of 1942 Oldsmobile Eight and Six

Can you tell me how much metal to plane off the head, and what compression ratio this engine can be increased to, without making the wall between the combustion chamber and the water channel too thin? A Nevada Subscriber.

UNLESS you are equipped to plane off this head in your own shop. I think it would be better for you to suggest to your customer that he buy a high-compression head from the Studebaker dealer. The present compression ratio is 6.5 to 1, and he can get a cast-iron head from the dealer, which will give a 7 to 1 compression ratio. It is listed under part No. 513815.

This is about as high as he should go in compression ratio, with the available commercial gasoline.

## BURNS OUT ROD BEARINGS

*Within the next few days I am going to have a job to do on a Federal bus equipped with a JXAC Hercules engine. The owner has given me the following history of the case: It seems that this engine burns out rod bearings as fast as they are put in. He claims several have been replaced and that the bearings have been tested with a test tank. The oil pressure goes to 60 when cold, but drops to a pound per mile when hot. A new oil pump has been installed.*

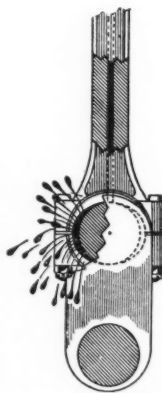
*I believe the trouble must be in the bearings, even though new ones have*

been installed. I had the pan off, and the rod bearings appear to fit tight on the shaft with a .003 in. feeler strip in the cap.

*The owner is going to bring the job in when he can spare the time. In the meantime, I would like your opinion.*—H. R. Maxfield, New Hartford, Conn.

**I** THINK there is no doubt that the crankshaft in this engine is worn out of round. If this is true, no bearing can be made to fit properly and stand up in service. The shaft either will have to be built up by metal spraying or the journals will have to be turned down and rods with undersize bearings fitted.

At the time this job is done, it would be well to check the oiling system, with particular attention to the oil passages in the shaft from the main bearing to the connecting-rod bearing journals. Also make an oil leak test on the engine to be sure that all bearings are receiving the correct amount of oil. It is possible that this trouble is caused by lack of lubrication, although I am more inclined to the belief that it is due to an out-of-round shaft.



## PERIODIC HUM

We have in service a 1938 Chevrolet Master DeLuxe Sedan that, at 60 m.p.h. or over, develops a terrible hum. The same noise or "hum" occurs between 50 and 40 coming down; in fact, at times it sounds and feels as though there were chains on the front wheels. At other speeds, the car runs and sounds fine, but at about 58 m.p.h. it is so bad that it is disagreeable to use. The car has just developed this noise in the last few hundred miles. We are sure it is in the front end but, since you spotted our last query right on the dot, we did not want to do anything to this until hearing from you.—D. G. Jackson, School District No. 3, Fort Morgan, Colo.

THE first thing I would do with that 1938 Chevrolet, which has developed a "hum" at a speed of 60 miles per hour, would be to balance all the wheels and then switch the front tires to the rear and from right to left. It sometimes happens that the tires wear so that they develop ridges on the side of the tread, and this will give the impression of chains and will also sometimes develop a hum.

If this does not do the trick, the next thing I would do would be to install a new muffler and check the tail pipe carefully to be sure it is not bent or has not been damaged by stones. Then I would increase the length of the tail pipe by about six inches in an effort to move this



periodic hum down the scale so as to put it low enough to be below the normal driving range. It quite often happens that the muffler tail pipe, in combination with the muffler, will set up a periodic hum similar to the noise produced by a pipe in a pipe organ. By changing the length of the pipe, the period, or rather the speed range at which the noise appears, can be raised or lowered sufficiently to lift it out of the speed range at which the owner normally drives. By lengthening the pipe, the noise is lowered in the speed range and by shortening the pipe, the noise is raised in the speed range. If this owner normally drives at about 60 m.p.h. the noise can be lowered so that he will drive through it before reaching his normal driving speed or, if he objects to this, the tail pipe can be cut off so that the noise will be above the speed at which he normally drives.

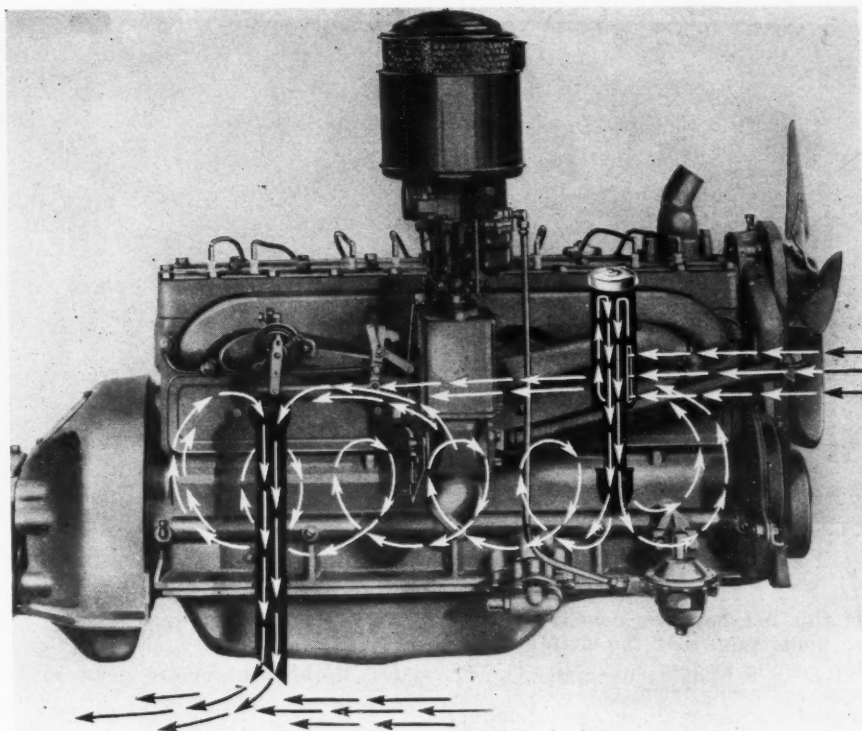
This muffler and tail pipe roar is very deceiving and is quite often confused with a defective rear axle. In some cases, it is so bad that it sets up a vibration throughout the car and I have seen jobs torn down and an attempt made to balance the drive shaft to eliminate a periodic vibration, when the entire cause was the harmonic developed by the tail pipe.

## OIL CONSUMPTION AT HIGH SPEED

I have a 1937 six-cylinder Pontiac that I overhauled, installing new rings, rod and main bearings and a new main bearing oil seal. The engine runs fine and uses no oil under 50 m.p.h., but between 50 and 70 m.p.h. the oil just pours out of the rear end of the motor. It does not come out of the seal at the end of the camshaft, that I can see.

Had a little trouble with the first three cylinders missing, but after I replaced the fuel pump this trouble disappeared, but I think these three cylinders are a little weaker than the others.

I still think I have fuel pump trouble. I think at high speed it



forms a vacuum in the motor and forces the oil out. If you can help me I would appreciate it.—Clem Petry, Grantfork, Ill.

THE point I would check first in this car is that of the crankcase ventilating system. I would be sure that the ventilator is clean and, to be on the safe side, I would clean the steel wool filter by washing it in gasoline. Perhaps a better method would be to remove the filtering element from the ventilator unit and leave it out entirely. Then I would be sure that the air cleaner itself was properly cleaned.

If this car is equipped with a combination fuel and vacuum pump, it is quite possible that the vacuum pump diaphragm is leaking, which would force oil vapor up into the intake manifold and result in burning the oil and, of course, smoking at the muffler tail pipe. I suggest you disconnect the line leading from the vacuum pump to the manifold and hold a piece of white paper over the end of this line while the engine is

running. If the diaphragm is leaking, an oil spray will show up on the paper. If you find this to be the case, the vacuum pump diaphragm should be replaced.

I assume that, when you installed main bearings, you checked the shaft and are satisfied that it is not out of round. If it is, it will be impossible to make this engine hold oil, particularly at high speed. If the shaft is more than .001 inch out of round, it should be turned true and an undersize bearing fitted.

I am inclined to believe, however, that your trouble is pressure build-up in the crankcase, due to the fact that the ventilator unit is partially plugged up.

## ENGINE OVERHEATS

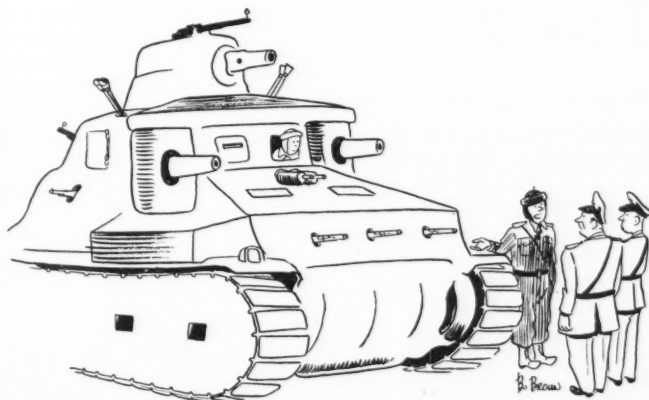
One of our customers owns a 1936 Nash which has given considerable trouble from overheating.

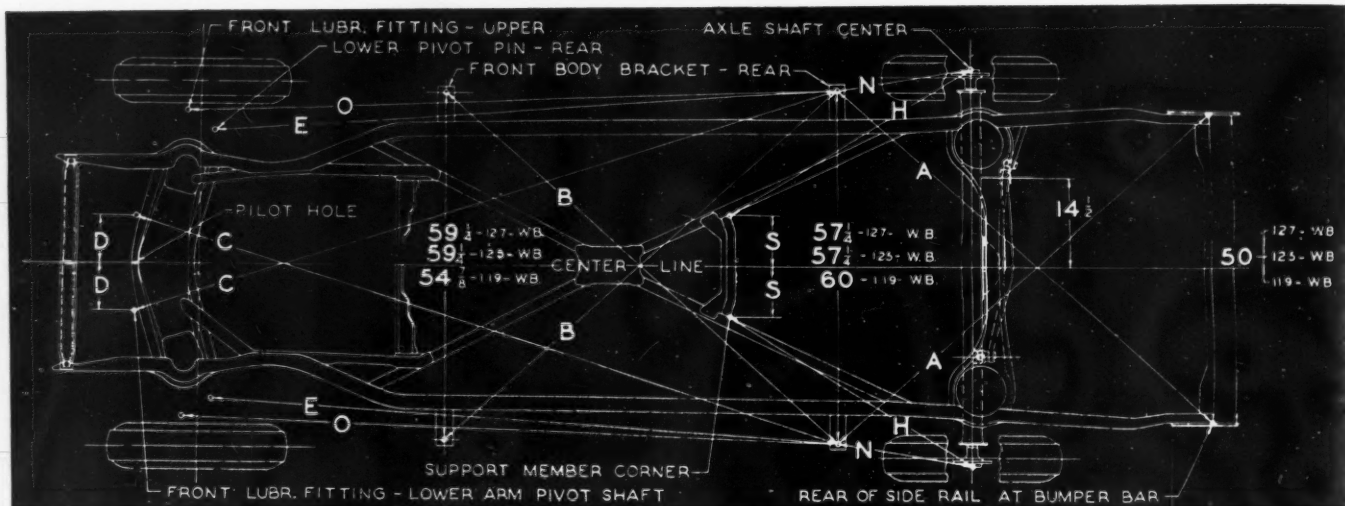
The radiator has been boiled out, thermostat removed and an entire new water pump assembly installed of the latest type; valves and other mechanism of that sort have been checked, as well as timing. This has all been done over a period of a year and now the car still heats.

Can you give us any information regarding this trouble? C. F. Kylling, Marysville, Calif.

I BELIEVE the overheating trouble you are having with that 1936 Nash is due to the fact that the cylinder block has not been cleaned out. You have mentioned that the radiator has been cleaned, a new thermostat and a new water pump installed and the motor properly tuned, but you do not mention that the cylinder block has been cleaned out.

"Now our plan, General, is to let these tanks fall into the enemy's hands! Boy! Do they eat up the oil?"





Frame diagram of 1942 Oldsmobile Eight and Six

If this has not been done, it is easy to understand that the circulation of the cooling system is taking the rust and sediment from the block and dumping it up into the radiator, which results in the radiator becoming plugged up again.

My first suggestion is that you again clean the radiator and also that you clean out the block, flushing it thoroughly in a reverse direction to normal flow. In other words, the cylinder head and block as an assembly should be flushed from the top to the bottom after having first been treated with a cleaning solution.

### PLUGS TOO HOT

I am having spark-plug trouble with a customer's 1940 Chevrolet. A new set of plugs will run fine for 1800 or 2000 miles and will run up to 75 or 80 m.p.h. but after the 2000 miles the car seems to lose power. The best speed obtainable is 45 to 50 and then the car begins jerking. We remove the plugs and clean them by sand-blast and they will not fire in testing machine over 115 lbs. pressure, while new plugs will fire at 135 lbs. pressure with the same gap. We have tried three sets of new plugs in this car with the same results.

Can you give me any advice that will give better results?—Parker's Garage, Tappahannock, Va.

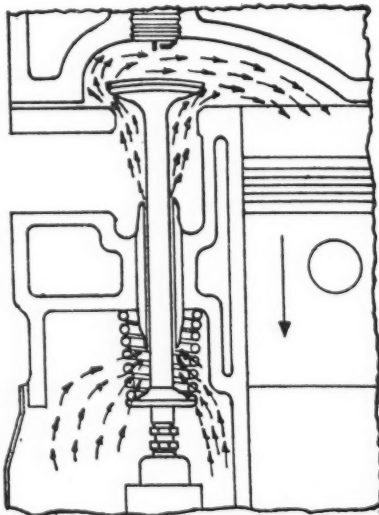
**M**Y suggestion is that you try using colder plugs in this engine. Apparently this owner is a high-speed driver and requires a plug that will stand up better under those conditions. I believe you will find that a plug which runs colder will stand up better. You can drop down to a type one or even two stages colder, or you could use the commercial type of plug which is for heavy-duty service. I believe these colder-running plugs will correct your trouble.

### OIL CONSUMPTION INCREASES

Will you please explain why oil consumption is often increased after a valve grind job?—Bill Hunt, San Francisco, Cal.

**T**HERE are two explanations for an increase in oil consumption after a valve grinding job. The first is that, by making a new seat for the exhaust valve you have eliminated the possibility of any leakage on the suction stroke through this valve, and therefore the partial vacuum in the cylinder is higher.

The second is that, by cleaning the valve stem and guide, the inlet valve



particularly, you have effected an increase in the clearance between the stem and the guide which, with the increased vacuum, has a tendency to draw more oil vapor up the inlet valve stem through the guide and into the combustion chamber.

### LOW SPEED MISS

One of our customers has a 1940 Oldsmobile that has a miss in the

engine at low speed, and we have been unable to correct the trouble. Also, we are unable to make this engine idle smoothly.

We have checked the points and plugs, installed a new condenser, thoroughly overhauled the carburetor including cleaning it out with solvent cleaner. Ignition timing is right, and compression is even in all cylinders. Did a valve-and-carbon job on it about a month ago, but still have been unable to make it idle right, or to eliminate the miss on a pull below 15 miles per hour. What would you suggest? A Connecticut Subscriber.

**Y**OU apparently have done a good job of trying to locate this trouble, and normally the work you have done should have been effective.

However, there is one point that you do not mention, and that is the fuel pump. Check the fuel pump cover screws on both the pump side and the vacuum side to be sure they are tight. Loose cover screws will permit a vacuum leak, and will result in uneven idle and a miss at low speed.

### EXCESSIVE HEAT AT ELECTRICAL CONNECTIONS

I have a Studebaker Champion here in my territory, which has given me a lot of trouble with hot switches and wiring. I have made all the tests I know, using the motor analyzer, and the only thing I have found to be other than normal is the fact that, at all wiring terminals in the light circuit and elsewhere, with the motor running at charging speed, there is a 7-volt reading. The connections which do not heat up have a reading of 6 volts.

I have checked all connections carefully, but am unable to find this trouble. C. W. King, Feather Falls, Cal.

**T**HE usual thing to look for in this connection is poor contacts where wires connect to switch terminals.



The best thing for you to do is to check with a millivoltmeter across the connections to determine whether there is a voltage drop due to the connection. In no case should the drop read greater than 1/10 of a volt, and, if it does, it indicates that the connection is poor. Then you will have to break the connection and clean the contact surfaces carefully to get a good contact.

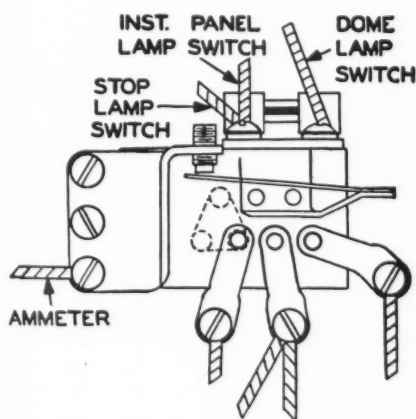
## STOP LIGHT SWITCH BURNS OUT

Once in a while we get a complaint about the 1940 Pontiac stop-light switch being damaged by burning out, and in each case we have found a short in the stop-light wiring circuit.

Isn't there some way we can put a fuse in this circuit to prevent this trouble? An Atlanta, Ga., Subscriber.

**Y**ES, a change was made in the 1940 Pontiac lighting switch during the 1940 production, so that a fuse could be inserted in this circuit.

The fuse can be purchased from your Pontiac dealer under part No. 147684. Illustration shows the new lighting switch, designed to take this fuse.



## OIL CONSUMPTION

One of our customers has a 1939 Buick that is developing into a problem child.

The first owner drove it about 11,000 miles and, because it began to use a quart of oil in less than 100 miles, he traded it. The second owner complained of the same trouble, and reported fouling of plugs. He had a complete motor overhaul: Valves, carbon, rings and new rods.

In less than 100 miles the plugs started fouling again. Also, the oil pressure would stay up to 35 until the car was driven about 25 miles, or until it warmed up good, and then the pressure dropped back to zero. He took the car back to the mechanic who did the job, who insisted there was nothing wrong. He cleaned the plugs again. The owner became dissatisfied, and traded the car.

"I think you have the heater turned on too strong."



Now one of our customers has it, and is complaining of the same trouble. Different heat range spark plugs are being used now, and the fouling is not as bad, but the engine still uses too much oil, and the oil pressure drops back to zero after the engine is warm.

In view of the past history of this car, we thought it advisable to ask for your suggestions before we go into the trouble. L. E. Hall, Hall Brothers, Marietta, Ohio.

**E**XCESSIVE oil consumption is a rather common complaint, and yet is one of the most difficult to correct because the average mechanic does not go into the trouble deep enough. No doubt you have found this to be true in your experience.

There are five general causes for this condition, and each one has to be checked in order to do a thorough job. First of all is, of course, the fit of the piston rings. In this case, new rings have been installed with no beneficial results, so it would seem that the rings were not the cause, assuming, of course, that a good grade of rings was used, and that the job was done carefully.

I note that new rods were installed; nothing is mentioned about the mains. I recommend that a pressure test of the bearings be made to determine the fit. I am inclined to the opinion that the bearings, particularly the rod bearings, are throwing off so much oil to the cylinder walls that the rings are unable to control it, and it is leaking past to the combustion chamber. If this is the case, it is not the fault of the rings, but of the bearings. If you find excessive throw-off, it will probably be due to the fact that the shaft journals are worn out-of-round. New rod bearings will not help; the journals will have to be turned true and undersize bearings installed. Excessive oil throw-off at the bearings is the second cause of high oil consumption.

The third cause is worn intake valve guides, and is an item that is generally overlooked by the average mechanic. I would check the fit of the valve stem in the guide, and, if it appears excessive, I would install valve guide packing in an effort to control it, or install new guides and new valves.

The next cause, and incidentally one of the first things to check before going into the engine, is the diaphragm in the vacuum pump. This car was equipped with a combination fuel and vacuum pump, the vacuum side to provide steady vacuum for the operation of the windshield wiper. If this diaphragm is cracked, it will cause excessive oil consumption by admitting oil to the intake manifold. The condition of the vacuum pump can be checked easily by disconnecting the line at the manifold and holding a piece of white paper over the end while the engine is running. If the diaphragm is cracked, oil spray will show up on the paper.

The fifth cause, and one that should be perfectly obvious, is external leaks. Your letter did not mention what had been done in checking for this condition. The rocker arm cover gasket, valve lifter cover plate gaskets, oil pan gasket, front and rear main bearings and the plug at the rear of the camshaft are the points that will have to be checked for leaks.

I would first check the vacuum pump, and check for external leaks. However, in view of the fact that you mention falling oil pressure when the oil is warm, I believe you will find the major cause of trouble in this case to be a crankshaft that is worn out-of-round. The oil pressure test of the bearings will show this up, and, if it exists, the only way you will be able to eliminate the trouble is to have the shaft journals turned true and then install rods with undersize bearings. The mains should be checked, too, but usually the trouble is in the rod bearing journals.

# Tune-Up Specifications

These Specifications Are Brought Up-to-Date Each Month by the Car Manufacturers and Supersede All Others Previously Published

PASSENGER CAR MAKE AND MODEL	Compression Pressure at Cranking Speed (Lb.)	PISTON RINGS		VALVES						IGNITION						FRONT AXLE						
		No. and Width Compression	No. and Width Oil	Inlet—Seat Angle (Deg.) Exhaust—Seat Angle (Deg.)	Stem Diameter	Operating Tappet Clearance		Inlet Tappet Clearance for Valve Timing	Timing		Spark Plug		Breaker Point Gap (In.)	Cam Angle (Deg.)	Timing		Capacity Crankcase (Qts.)	Capacity Cooling System (Qts.)	Caster (Deg.)	Camber (Deg.)	Toe-in (In.)	King Pin Inclination (Deg.)
						Inlet	Exhaust		Inlet Valve Opens— Before or After T.C.	Exhaust Closes— Before or After T.C.	Make and Model	Gap (In.)			Spark Occurs °T.C. Timing Marks Located On—	Rods Removed From						
Buick-Special..... 42-40A	112	2- $\frac{3}{16}$	2- $\frac{3}{16}$	45° 45'	.371	.015H	.015H	13B	22A	AC-46	.025	.015	31	4B	Fly	A 6	13	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$
Buick-Ex. Spec. .... 42-40B	112	2- $\frac{3}{16}$	2- $\frac{3}{16}$	45° 45'	.371	.015H	.015H	13B	22A	AC-46	.025	.015	31	4B	Fly	A 6	13	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$
Buick-Super..... 42-50	115	2- $\frac{3}{16}$	2- $\frac{3}{16}$	45° 45'	.371	.015H	.015H	13B	22A	AC-46	.025	.015	31	6B	Fly	A 6	13	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$
Buick-Century..... 42-60	115	2- $\frac{3}{16}$	2- $\frac{3}{16}$	45° 45'	.371	.015H	.015H	14B	25A	AC-46	.025	.015	31	6B	Fly	A 7 $\frac{1}{2}$	16 $\frac{3}{4}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$
Buick-Roadmaster..... 42-70	115	2- $\frac{3}{16}$	2- $\frac{3}{16}$	45° 45'	.371	.015H	.015H	14B	25A	AC-46	.025	.015	31	6B	Fly	A 7 $\frac{1}{2}$	16 $\frac{3}{4}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$
Buick-Limited..... 42-90	115	2- $\frac{3}{16}$	2- $\frac{3}{16}$	45° 45'	.371	.015H	.015H	14B	25A	AC-46	.025	.015	31	6B	Fly	A 7 $\frac{1}{2}$	18	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Cadillac..... 61, 62, 63, 60S	100	2 (a)	2- $\frac{5}{16}$	45° 45'	.341	AA	AA	AA	TC	10A	AC-104	.030	.015	31	5B	TD	A 7	25	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	5° 51'	5° 51'
Cadillac..... 67, 75	100	2 (a)	2- $\frac{5}{16}$	45° 45'	.341	AA	AA	AA	TC	10A	AC-104	.030	.015	31	5B	TD	A 7	25	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	5° 51'	5° 51'
Chevrolet.....	80	2- $\frac{1}{8}$	1- $\frac{3}{16}$	30° 30'	.341	.006H	.013H	.006	3B	5A	AC-104	.040	.018	39	5B	Fly	A 5 $\frac{1}{2}$	15	0 to +1 $\frac{1}{2}$	N $\frac{1}{4}$ to +1 $\frac{1}{8}$	0- $\frac{1}{16}$	4 $\frac{1}{2}$
Chrysler-Roy. & Win. C-34	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.340	.008H	.010H	.014	12B	5A	AL-A7	.025	.020	34 $\frac{1}{2}$ -38	2A	VD	A 5	18	N1 to +1	0 to +3 $\frac{1}{4}$	4 $\frac{1}{4}$ to 6	4 $\frac{1}{4}$ to 6
Chrysler-Sar. & N.Y. C-36	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.340	.008H	.010H	.011	6B	12A	AL-A7	.025	.018	27-30 $\frac{1}{2}$	VD	A 6	26	N1 to +1	0 to +3 $\frac{1}{4}$	4 $\frac{1}{4}$ to 6	4 $\frac{1}{4}$ to 6	
Chrysler-Cr. Imp. .... C-37	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.340	.008H	.010H	.011	6B	12A	AL-A7	.025	.018	27-30 $\frac{1}{2}$	VD	A 6	26	N1 to +1	0 to +3 $\frac{1}{4}$	4 $\frac{1}{4}$ to 6	4 $\frac{1}{4}$ to 6	
Crosley.....	80	2- $\frac{1}{8}$	1- $\frac{5}{16}$	45° 45'	.311	.007C	.009C	20B	.....	AL-A5	.025	.020	46	TC	Fly	A 3	.....	6 $\frac{1}{2}$ to 11	2	1 $\frac{1}{8}$	6 $\frac{1}{2}$	
De Soto-DeL. & Cus. S-10	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.340	.008H	.010H	.014	12B	6A	AL-A7	.025	.020	34 $\frac{1}{2}$ -38	4A	VD	A 5	18	N1 to +1	0 to +3 $\frac{1}{4}$	4 $\frac{1}{4}$ to 6	4 $\frac{1}{4}$ to 6
Dodge-DeL. & Cus. D-22	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.340	.008H	.010H	.014	12B	6A	AL-A7	.025	.020	34 $\frac{1}{2}$ -38	2A	VD	A 5	15	N1 to +1	0 to +3 $\frac{1}{4}$	4 $\frac{1}{4}$ to 6	4 $\frac{1}{4}$ to 6
Ford..... Six	140y	2- $\frac{3}{16}$	1- $\frac{3}{16}$	45° 45'	.311	.013C	.013C	33	6A	Ch-H-10	.032	.015	.....	4B	DH	A 8	8	1	1 $\frac{1}{8}$	8	8	
Ford..... V-8	140y	2 (c)	1 (d)	45° 45'	.311	.012C	.015C	TC	6A	Ch-H-10	.025	.015	.....	4B	DH	A 22	8	1	1 $\frac{1}{8}$	8	8	
Hudson-6 & Super 6..... 20	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.341	.010H	.012H	27 $\frac{1}{2}$ B	32 $\frac{1}{2}$ A	Ch-J-9	.038	.020	34	1 $\frac{1}{2}$ B	Fly	A 6	13	0 to 1 $\frac{1}{4}$	1 $\frac{1}{4}$ to 1 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3" 36'	
Hudson-Sup. & Com. 6-21-22	120	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.341	.006H	.008H	10 $\frac{1}{2}$ B	18 $\frac{3}{4}$ A	Ch-J-9	.038	.020	34	1 $\frac{1}{2}$ B	Fly	A 6	13	0 to 1 $\frac{1}{4}$	1 $\frac{1}{4}$ to 1 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3" 36'	
Hudson-Comm. 8..... 24-25	119	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.341	.006H	.003H	10 $\frac{1}{2}$ B	18 $\frac{3}{4}$ A	Ch-J-9	.038	.017	30 $\frac{1}{2}$	TC	Fly	A 9	18	0 to 1 $\frac{1}{4}$	1 $\frac{1}{4}$ to 1 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3" 36'	
Hudson-Com. Cus. 8..... 27	119	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.341	.006H	.008H	10 $\frac{1}{2}$ B	18 $\frac{3}{4}$ A	Ch-J-9	.038	.017	30 $\frac{1}{2}$	TC	Fly	A 9	18	0 to 1 $\frac{1}{4}$	1 $\frac{1}{4}$ to 1 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	3" 36'	
Lincoln-Zeph. & Cont. ....	125	2- $\frac{3}{16}$	1- $\frac{3}{16}$	45° 45'	.311	.013C	.013C	10 $\frac{1}{2}$ B	18 $\frac{3}{4}$ A	Ch-H-10	.029	.015	.....	4B	DH	A 5	27	3 to 5	1 $\frac{1}{4}$ to 3 $\frac{1}{4}$	3 $\frac{1}{4}$ 4 $\frac{1}{4}$	3 $\frac{1}{4}$ 4 $\frac{1}{4}$	
Lincoln-Custom.....	125	2- $\frac{3}{16}$	1- $\frac{3}{16}$	45° 45'	.311	.013C	.013C	10 $\frac{1}{2}$ B	18 $\frac{3}{4}$ A	Ch-H-10	.029	.015	.....	4B	DH	A 5	27	3 to 5	1 $\frac{1}{4}$ to 3 $\frac{1}{4}$	3 $\frac{1}{4}$ 4 $\frac{1}{4}$	3 $\frac{1}{4}$ 4 $\frac{1}{4}$	
Mercury.....	100	2- $\frac{3}{16}$	1- $\frac{5}{16}$	45° 45'	.311	.011C	.011C	TC	.....	Ch-H-10	.025	.015	.....	4B	DH	A 5	22	3 to 5	1 $\frac{1}{4}$ to 3 $\frac{1}{4}$	1 $\frac{1}{8}$	8	
Nash-Amb. 600..... 4240	120	2- $\frac{3}{16}$	1- $\frac{3}{16}$	45° 45'	.341	.015	.015	.019	19B	23A	AL-AN7	.025	.020	.....	TC	A 5	14	0 to 1 $\frac{1}{2}$	0 to 1 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	
Nash-Amb. Six..... 4260	125	2- $\frac{3}{16}$	1- $\frac{3}{16}$	45° 45'	.372	.015	.015	.015	14B	31A	AC-45	.025	.020	38	4B	VD	A 6	17	0 to 1 $\frac{1}{2}$	1 $\frac{1}{4}$ to 3 $\frac{1}{4}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Nash-Amb. 8..... 4280	110	2- $\frac{1}{8}$	2 (e)	45° 45'	.372	.015	.015	.015	14B	31A	AC-	.025	.020	38	7B	VD	A 7	16	0 to N $\frac{1}{2}$	1 $\frac{1}{4}$ to 3 $\frac{1}{4}$	3 $\frac{1}{2}$ to 4 $\frac{1}{2}$	4 $\frac{1}{2}$
Oldsmobile..... Special 6	102	2- $\frac{3}{16}$	2- $\frac{3}{16}$	30° 45'	.342	.008	.011	.012	5B	5A	AC-44	.040	.020	35	TC	Fly	A 5	18 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to +3 $\frac{1}{4}$	1 $\frac{1}{8}$ to 1 $\frac{1}{4}$	4" 51 $\frac{1}{2}$
Oldsmobile..... Dynamic 6	102	2- $\frac{3}{16}$	2- $\frac{3}{16}$	30° 45'	.342	.008	.011	.012	5B	5A	AC-44	.040	.020	35	TC	Fly	A 5	18 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to +3 $\frac{1}{4}$	1 $\frac{1}{8}$ to 1 $\frac{1}{4}$	4" 51 $\frac{1}{2}$
Oldsmobile..... Special 8	105	2- $\frac{3}{16}$	2- $\frac{3}{16}$	30° 45'	.342	.008	.011	.012	TC	10A	AC-44	.030	.015	31	2B	Fly	A 6	20 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to +3 $\frac{1}{4}$	1 $\frac{1}{8}$ to 1 $\frac{1}{4}$	4" 51 $\frac{1}{2}$
Oldsmobile..... Dynamic 8	105	2- $\frac{3}{16}$	2- $\frac{3}{16}$	30° 45'	.342	.008	.011	.012	TC	10A	AC-44	.030	.015	31	2B	Fly	A 6	20 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to +3 $\frac{1}{4}$	1 $\frac{1}{8}$ to 1 $\frac{1}{4}$	4" 51 $\frac{1}{2}$
Oldsmobile..... Custom 8	105	2- $\frac{3}{16}$	2- $\frac{3}{16}$	30° 45'	.342	.008	.011	.012	TC	10A	AC-44	.030	.015	31	2B	Fly	A 6	20 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to +3 $\frac{1}{4}$	1 $\frac{1}{8}$ to 1 $\frac{1}{4}$	4" 51 $\frac{1}{2}$
Packard-6..... 2000-10-20	125	2 (f)	1- $\frac{3}{16}$	30° 45'	.339	.007H	.010H	.012	1B	5A	(g)	.028	.020	38	4B	VD	A 5	14	N1 to +1	(h)	0 to 1 $\frac{1}{8}$	5° 35'
Packard-8..... 2001-11-21	125	2 (f)	1- $\frac{3}{16}$	30° 45'	.339	.007H	.010H	.012	1B	5A	(g)	.023	.015	27	5B	VD	A 5 $\frac{1}{2}$	17	N1 to +1	(h)	0 to 1 $\frac{1}{8}$	5° 35'
Packard-Sup. 8 2003-23-4-5	125	2 (f)	1- $\frac{3}{16}$	30° 45'	.340	AA	AA	AA	4B	10A	(g)	.023	.015	27	4B	VD	A 7	20	N2 to +1	(h)	0 to 1 $\frac{1}{8}$	5° 35'
Pack'd-Sup. 8..... 2006-7-8	125	2 (f)	1- $\frac{3}{16}$	30° 45'	.340	AA	AA	AA	4B	10A	(g)	.028	.015	27	4B	VD	A 7	20	N2 to +1	(h)	0 to 1 $\frac{1}{8}$	5° 35'
Plymouth..... P-14	125	2- $\frac{3}{16}$	2- $\frac{5}{16}$	45° 45'	.340	.008H	.010H	.014	12B	6A	AL-A7	.025	.020	34 $\frac{1}{2}$ -38	3B	VD	A 5	15	N1 to +1	0 to +3 $\frac{1}{4}$	4 $\frac{1}{4}$ 6	4 $\frac{1}{4}$ 6
Pontiac-Torpedo 6..... 42-25	160x	2- $\frac{3}{16}$	1- $\frac{3}{16}$	30° 45'	.312	.012H	.012H	.015	5B	5A	AC-45	.025	.020	37	4B	Fly	A 6	18	1 $\frac{1}{2}$ to N1	0 to 1	0 to 1 $\frac{1}{8}$	5
Pontiac-Stream. 6..... 42-26	160x	2- $\frac{3}{16}$	1- $\frac{3}{16}$	30° 45'	.312	.012H	.012H	.015	5B	5A	AC-45	.025	.020	37	4B	Fly	A 6	18	1 $\frac{1}{2}$ to N1	0 to 1	0 to 1 $\frac{1}{8}$	5
Pontiac-Torpedo 8..... 42-27	159x	2- $\frac{3}{16}$	1- $\frac{3}{16}$	30° 45'	.312	.012H	.012H	.015	5B	5A	AC-45	.025	.015	31	4B	Fly	A 6	19 $\frac{1}{2}$	1 $\frac{1}{2}$ to N1	0	0 to 1 $\frac{1}{8}$	5
Pontiac-Stream. 8..... 42-28	158x	2- $\frac{3}{16}$	1- $\frac{3}{16}$	30° 45'	.312	.012H	.012H	.015	5B	5A	AC-45	.025	.015	31	4B	Fly	A 6	19 $\frac{1}{2}$	1 $\frac{1}{2}$ to N1	0	0 to 1 $\frac{1}{8}$	5
Studebaker-Champ..... 4G	105	2 (a)	1- $\frac{5}{16}$	45° 45'	.312	.016C																

## ABBREVIATIONS:

(a)—Upper,  $\frac{3}{16}$ ; lower,  $\frac{1}{8}$   
(c)—.0915—.0920  
(d)—.1535—.1540  
(e)—1—1 $\frac{1}{8}$ ; 1—1 $\frac{1}{16}$

(f)—1—.093 1—.124  
(g)—AC-104 or Champion Y-4A  
(h)—R. H.—0+ $\frac{3}{4}$ —1 $\frac{1}{4}$   
L. H.—N. 0+1—0  
x—At 1000 rpm y—At 2400 rpm

A—Above  
AA—Automatic Adjustment  
AC—AC Spark Plug Division  
A—After Top Center  
B—Before Top Center

C—Cold  
Ch—Champion Spark Plug Co.  
DH—Distributor Housing  
Fly—



## POWER BRAKES

(Continued from Page 33)

valve rod to the valve lever so that the pin (which is smaller than the hole in the yoke) is resting against the rear of the hole in the yoke. Tighten the yoke lock nut in this position.

Next, move the operating valve rod to the applied position (which will place the valve lever pin against the front side of the hole in the yoke), and squeeze the valve lever and the power lever together with the fingers. Holding them in this position, adjust the set screw in the valve lever so that it just contacts the power lever. Tighten the set screw lock nut.

Still holding the valve and power levers in this position, connect the hydraulic master cylinder piston rod to the power lever. Adjust the master cylinder piston rod yoke by rotating the piston rod until it contacts the master cylinder piston. The piston rod should just touch the piston. If it is turned in too much it will cause the piston to move in the master cylinder and cover the by-pass port. By providing just a light contact between the piston rod and piston, the right amount of play within the master cylinder will be obtained.

## TRANSMISSION

(Continued from Page 24)

rod, loosen lock nut (3, Fig. 9) at the lower end of the steering column. Make certain that the transmission gears are in the neutral, and that the gear shift lever under the steering wheel is in the horizontal position. Then tighten the lock nut.

To adjust the gear selector rod, first place the transmission gears in neutral. Loosen lock nut (6, Fig. 9) on the forward end of the selector rod (9, Fig. 9) and tighten the adjusting nut (6, Fig. 9) until all play is removed from the rod. Then back off the adjusting nut one half turn to allow the proper clearance, and tighten the lock nut.

## WOMEN

(Continued from Page 34)

Even when one considers the fact that just about every one is taking better care of their cars these days for fear that "there ain't gonna be no mo'," it is still safe to say that the industry is benefiting from this training the women are receiving.

One dealer with whom we're acquainted (and there are probably lots of others) has seen another and dif-

ferent way to build good-will in his neighborhood — especially among women. He has put one of his large show rooms at the disposal of the local air-raid and first-aid instructors for the use of their evening classes. In this way he is able to meet these people and they're having the opportunity to see what a splendid shop he has and what a really decent chap he is. He knows, as should you, that this is a worth-while investment in the future of his business, for they'll remember all this when the war is over and they are again ready to buy a car.

There is more to winning this war than simply winning the victory over a tangible enemy. We've also got to score a victory over the economic aftermath—the inflation and deflation, boom and depression — that usually succeed war. Better business methods, less waste and more efficiency, more firm and friendly relations between buyer and seller, these are a few of the arms with which we'll win *this* victory, and the help of women, both as business aids and customers, will be needed before the battle is won. Now is the time to start building toward *that* victory!

**WITH Raybestos IT'S QUALITY FIRST**

Signs identical with that shown here, hang throughout the factories and office of Raybestos.

It's more than a slogan on a sign. It's the justification of the Raybestos business—and has been for 37 years. Quality first! Existing war conditions make quality more vital than ever. Friction materials must stand up. Hence, Raybestos control of quality is more rigid than ever. It is the quality of Raybestos friction materials that has caused them to be specified by America's land, sea and air forces on the war front. It is the quality of Raybestos friction materials that enables you to satisfy today's severe requirements on the civilian front and offer your customers products that last longer.

You can count on Raybestos.  
THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.  
BRIDGEPORT, CONN.

**Raybestos**  
AMERICA'S BIGGEST SELLING  
**BRAKE LINING**

YOUR 2 BEST FRIENDS for HIGHWAY SAFETY

BRAKE LINING, CLUTCH FACINGS, FAN BELTS, HOSE • FOR CARS, TRUCKS, BUSES, TRACTORS

# Longer OIL CONTROL because LOWER WALL PRESSURES

To build longer life into piston rings by reducing the wall pressures necessary to oil and blow-by control has been a guiding objective of Ramco's 21 years of engineering the spring ring principle. Result of this continuing effort are many Ramco developments, such as those

illustrated here, which serve to minimize the importance of pressure in the control of oil and blow-by. Evidence of Ramco's success in this effort is the Ramco 10,000 Mile Ring and Labor Guarantee now being used by thousands to increase ring jobs and used car sales.



**1 THE INNER RING**  
The inner ring is never duplicated... prime function is to maintain pressure, stabilize piston, and give ring flexibility to follow tapered or worn cylinder wall contour.

Copyright, 1942, Ramco

**3 MORE BEARING SURFACES**  
The new 3-Ring Piston Combination offers many advantages over conventional designs.



**2 THE RAMCO DOUBLE LIFE PRINCIPLE**

(A) Inner Ring contacts only the cast-iron segment during initial break-in period...  
(B) then both for long life.

**4 SPIRO-SEAL**

The continuous steel segment which exerts its maximum pressure only on the downstroke.

RS-POWER with

**RAMCO**

IT BRIDGES THE GAP  
**10 up**

PISTON RINGS AND  
PISTON  
SKIRT EXPANDERS

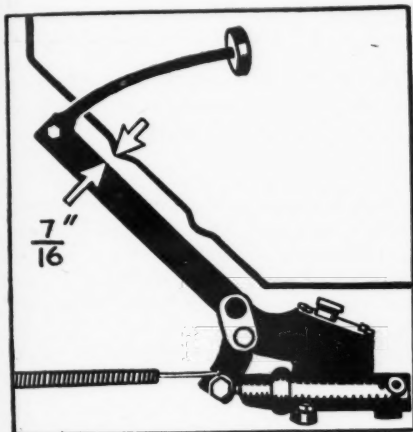


# SERVICE HINTS

## FROM THE FACTORIES

### Brake Pedal Clearance

The brake pedal to floor board clearance on the 1942 Chevrolet passenger car should be adjusted to  $\frac{7}{16}$  in. This measurement should be taken from the top surface of the brake



pedal arm to the first toe-board reinforcing rib below the pedal rod, as shown in the illustration.

It is important that this clearance be maintained because the operation of the mechanical stop light switch is controlled by the brake pedal travel.

The clearance of  $\frac{1}{4}$  in., which applied to all 1941 models, still applies to the 1942 truck.

### Piston Installation

Early 1942 production pistons for the Studebaker engines have a pattern number stamped on the inside surface of the piston, below and near one of the two pin bosses. These pistons should be installed in the engine with the pattern number toward the front.

Later production pistons have a raised boss inside the piston on a line with the piston pin holes. These pistons should be installed with the boss toward the camshaft side of the engine.

### Manifold Gasket Installation

The 1942 Studebaker Champion and Commander engines use a one-piece manifold gasket. When a new gasket is used, care must be exercised to be sure that it is properly installed. The Champion gasket should be installed

with the raised rings away from the cylinder block; the Commander gasket should be installed with the seams in the gasket turned toward the cylinder block.

The 1942 President engine uses a two-piece gasket for the manifolds, and should be installed so that the squared ends meet in the center of the engine.

### Piston Ring Change

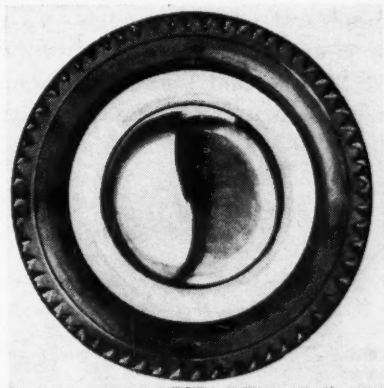
Effective with engine serial number B-52783, the 1942 Studebaker President engine is equipped with a thinner oil-control ring to permit using a ventilated inner ring.

If the late-type ring is used for replacement in engines prior to No. B-52783, the inner ring must also be used. The new rings are listed under Studebaker Part No. 516251 for the oil ring, and No. 182471 for the ventilated inner ring. The oil-control ring is available in standard, .010 in., .015 in., .020 in., .030 in., and .055 in. oversizes.

### White Wall Wheel Rings

The white wheel ring used on the 1942 Dodge to give an appearance of white sidewall tires should be removed and reinstalled as follows:

Remove hub cap, and then insert the point of a long screw driver un-



der the inner edge of the ring and pry the ring loose, using the wheel disk as a fulcrum.

To reinstall, position the ring on the wheel so that the slot is at the tire valve. Push that side of the ring into place on the wheel; then the other side can be snapped into position.

**RE-POWER**  
with

**RAMCO**  
**10 up**  
IT BRIDGES THE GAP!

## WAR SERVICE

(Continued from Page 27)

maximum of eye-appeal were given major attention in the remodeling plans, to harmonize with the attractive exterior of this building. Tube lighted signs further enhance the exterior.

Interior walls are finished in a series of four-color panels and chrome stripings that give an unusual modernistic effect, a potent eye-magnet. First is a four-foot wide maroon base, followed by a horizontal four-inch

scarlet red trim, a four-foot lemon-yellow horizontal panel, and topped by a four-foot snowy lighted panel to the ceiling. Breaking each color panel is a brilliant chrome stripe.

Besides being unusually attractive, this horizontal panel treatment of walls is premised on the fact that the eye naturally follows a continuous line and several such lines extending about the walls strongly impel the customers' eyes to visit all parts of the room to inspect displays and equipment.

The corner of the service floor at the junction of the side and main



"I'm afraid that switch from checking oil to serving refreshments was too much for Carter."

street is devoted to a customer lounge with upholstered chairs. Also included in this space (separated from rest of the floor by chrome guard rails) are accessory displays. Sometimes a used car is spotlighted with only half its surface refinished to emphasize what a whale of a difference a new paint job makes.

The rest of the space fronting the main street is used for customer cars on the waiting list. And the far side is devoted entirely to quick service, motor tune-up, lubrication, headlight adjustment, and wheel alignment. Complete new equipment has been installed, including motor test equipment, two four-post electric hoists for the lube department. Headlight tester and wheel balancer, as well as front end equipment are other major equipment used in this department.

This service department is given special emphasis by a superstructure, which carries out the multi-colored panel theme, and red and yellow wood block letters designate each division, such as "Motor-Tune-Up," "Lubrication," etc.

The lube section is particularly noteworthy because of the complete absence of oil and grease drums, which makes for neatness and cleanliness about the lubrication racks.

When Paul Duff, service superintendent, was scratching his head to find the best possible arrangement for the quick-service department, it occurred to him that there was no good reason why oil and grease drums could not be located on the second floor, and the oil and grease piped to the lube racks. This was done without a great deal of trouble. Three-inch outlet pipes were welded to the bottom of standard oil drums, through which the oil flows by gravity to the lube department below, where oil is tapped from ordinary

(Continued on Page 56)

# EXTRA YEARS OF SERVICE

Today, the extra years of service built into Brunner compressors is more important than ever.

It means Brunner air compressors help you work faster, better by keeping air-operated tools working more efficiently. They help you conserve men and man-hours. This enables garage and service station operators to provide better service

and maintenance on cars and trucks ... keep them rolling for defense longer.

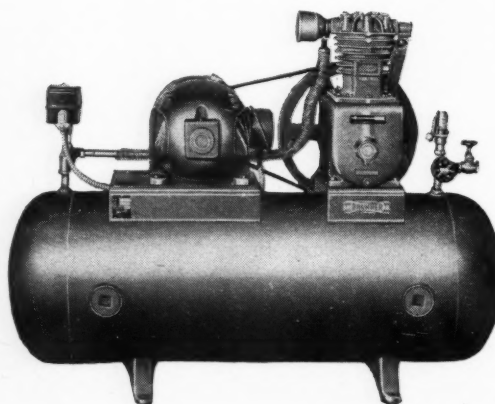
Brunner air compressors are available in ¼ h. p. to 10 h. p. in horizontal and vertical models. Write for your free copy of the Brunner Air Manual and Catalog. Brunner Manufacturing Company, Utica, New York, U. S. A.



**COMPRESSORS**

### BRUNNER MODEL H-621

Two stage 1½ h. p. outfit for delivering high pressure air, 150-200 pounds... Completely assembled and fully automatic.







## "My son and I figure our best bet for long-term profit is Studebaker"

"BETWEEN us, my son and I have spent forty years in the automobile business—the last five of them with Studebaker," writes A. R. Gribben of Master Motors Corporation, Newark, New Jersey.

"We're both thoroughly sold on the fact that no maker has delivered more consistently salable cars than Studebaker, and that goes double for the 1942 models.

"Another thing that makes us more than satisfied with our present connection is this: Studebaker understands the value of real factory cooperation. Studebaker's selling plans are always keyed to the trend of the times and are slanted to the dealer's point of view. I like that, and believe it to be a mighty important factor in developing the profit possibilities of my business.

"My son and I look forward confidently to the future. We are satisfied that Studebaker will never let us down either in the quality of its product or in the sincerity of its cooperation."

Dealers whose wide experience has given them the most thorough knowledge of the automobile business are invariably the ones who place the highest value on Studebaker's deserved reputation as "America's friendliest factory." They know that even the finest cars need the backing of a sincere and intelligent sales program to assure dealers of long-term profits. Studebaker dealers should benefit this year, and in the future, from Studebaker's close study of the problems of retail operations.

# STUDEBAKER

THE GREAT INDEPENDENT

★ *For America's Victory* ★

Studebaker is building an unlimited quantity of airplane engines, military trucks and other material

# SHOP KINKS

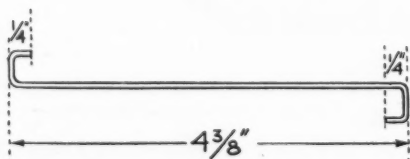


Here's your chance to pick up a little cigaret money. We'll pay three bucks (\$3.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and quicker than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest.

Here are some that were accepted this month:

## HOOD HOLDER

Due to the weight of the 1942 Chevrolet hood, it is advisable to prop it up in the wide open position when doing work on the engine. A stick at the front is likely to get in the way, so I have made a hook which is used to lock the hinge arms.



I used 3/16-in. welding rod, bent with reverse hooks as shown. Simply hook it into the hinge bars to prevent them from operating, and the hood cannot drop. The hook is small and out of the way, allowing unobstructed working space.—J. T. Johnson, Box 251, Alpine, Texas.

## COOLING SYSTEM CLEANING

If you have never tried this one, you have a surprise coming. It covers cleaning out the cooling system with steam, which can be done with the equipment normally used for steam cleaning the motor and chassis.

Remove the upper and lower radiator hoses and turn the steam into the block. Leave it in about 15 minutes, and you will be surprised at the amount of sediment that will come out after about five minutes.

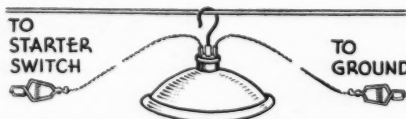
Then remove the radiator and turn

it upside down. Turn the steam into the radiator so that it will force the sediment out the filler neck. It does a swell job.—Cliff Oppel, Duluth, Minn.

## TROUBLE LIGHT

Here is an idea for making a trouble light that I have found to be easy to make, and one that gives ample light:

Take a sealed-beam headlight that has one filament burned out. Solder a wire to the ground connection and another to the connection which goes to the filament that is not burned out. Install clamps on the other ends of these wires. To the connection for the burned out filament solder a hook, and the light is completed. In use, snap



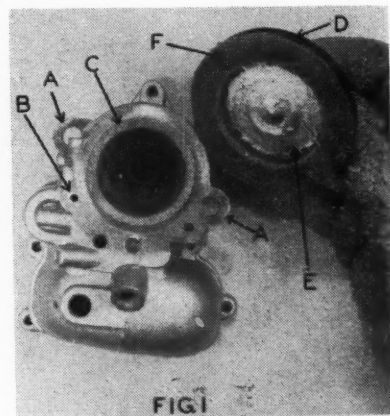
the filament connection wire to the starter switch and the other wire to ground. Hang the hook over the radiator brace rod or wherever the light is being used, and you have a trouble light that has cost practically nothing.

If you should break the light or the filament should burn out, install the wires on another light. They are normally thrown away when one filament is burned out, so you are getting extra use out of the light which otherwise

would be tossed in the junk box. Hal Hawkins, Turnipseed Chevrolet Co., 155 E. Parker, Bartow, Fla.

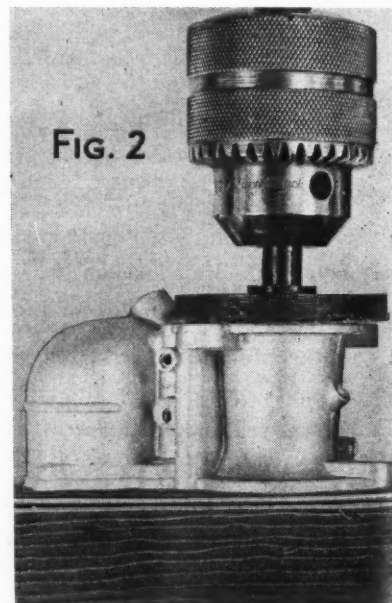
## REFACES CARBURETOR FLANGE

Carburetor bodies made of white metal have a disturbing habit of warping, causing air leaks. This is particularly true of the flanges of the lower and upper bodies.



I have made a tool for refacing the flanges to true them up. The tool is made from a magneto gear as shown at "D," Fig. 1. The center of the gear was counterbored "E" to allow it clearance for those carburetors which have the venturi "C" extending above the surface of the flange. Coarse emery cloth is glued to the gear as shown at "F."

The affected part is placed on a surface plate, and the tool mounted in a drill press, as shown in Fig. 2. By

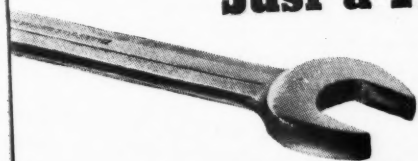


this means it is possible to true up the flange so that an air-tight joint will result.—Milt Pullen, 18829 Reed Ave., Melvindale, Mich.



**Just a Few Hours to Do a Job . . .**

**But Years to Learn How!**



**D**OCTOR of Motors! You bring to him a limping automobile and he sends it out humming with new life and power. Frequently it's only a ten-minute job—sometimes longer. But whatever the time he actually spends fixing your car—think of the time he has spent in order to know how to fix it.

The modern automobile mechanic serves the car owner well and honestly. But to serve he must know. To his dexterity of hand he must add years of experience and study—study that never ends, for he must keep yearly pace with the design and servicing of America's motorcars.

**B**ECAUSE he's intelligent, the automobile mechanic has a sense of responsibility for your car and your safety. That is why better mechanics everywhere recommend and install Perfect Circle Piston Rings.

If your car wastes oil, is sluggish, smokes at the exhaust—have your favorite mechanic install Perfect Circles. He knows how and why Perfect Circles do a better job of stopping oil pumping, increasing gas mileage and restoring power, pickup, and pep. It will take but a few hours—and the cost is surprisingly small. Perfect Circle Companies, Hagerstown, Indiana, U. S. A. and Toronto, Canada.

**PERFECT  
CIRCLE**

  
**PISTON RINGS**

**B**uilding Confidence in Your Ability!

This is one of a series of Perfect Circle advertisements appearing in national publications. It is Perfect Circle's way of telling America that your knowledge justifies your getting a fair price for your work.

## WAR SERVICE

(Continued from Page 52)

faucets. Gear and chassis grease drums on the upper floor are fitted with air pressure pumps and a regulator gage on the connecting air lines. Outlet pipes go to both grease racks, so that grease guns attached can be used by both racks simultaneously.

The parts department and the repair shop are on the second floor, while the body and paint shop have been added to occupy the upper floor of the main plant across the street.

Though the physical properties have been given major consideration the sales program as well has been keyed to the temper of the times, especially with reference to battery and accessory sales.

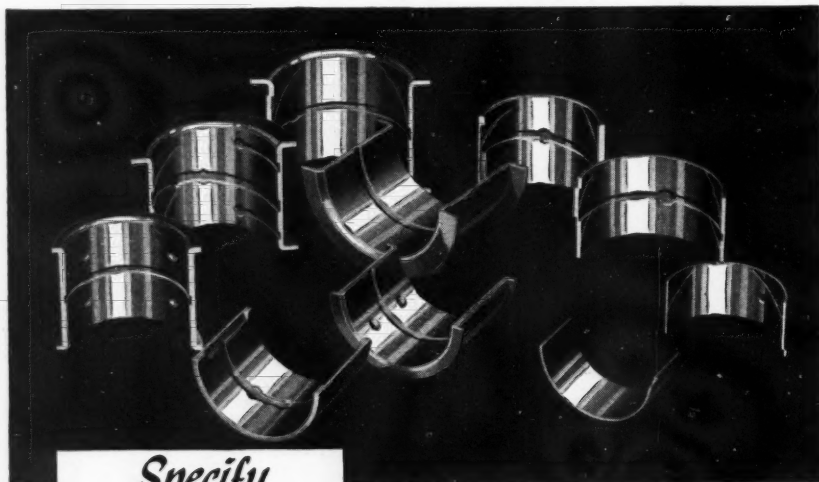
Lee Eberhardt, veteran of Seattle's automobile row, and now in charge of these sales at Seaboard Motors, outlined the basic pattern adopted to fit new conditions now appearing on the horizon.

"Ever since it became apparent that cars must serve their owners for the duration, we geared our sales program with that thought uppermost in mind," Eberhardt emphasized.

"We induce new car buyers to install heavy-duty batteries for long life—just in case the batteries of a year or so hence suffer from material shortages, such as lead.

"Special polish to protect the paint surface of cars is another item that lends itself to easy sale when the customer is in the mood to protect his new car and make it last to the utmost. Similarly seat covers are finding a new favor with many car buyers."

Thus, with both service and sales, this firm is adapting itself to changing trends, and this adaptation is proving its worth in actual figures. Last May customer labor represented a mere \$1,500 per month, when Clyde Johnson took over the distributorship. By October service volume in customer labor had increased to \$48,000 per month, with volume steadily climbing.



*Specify*  
**JOHNSON  
BRONZE**  
*for Quality  
Bearings*

In times like the present, the job of keeping the cars and trucks of America operating at full efficiency is a serious obligation. This is not the time to experiment. Only replacement parts of consistent quality will meet the unusual demands of service now being imposed.

It is an easy matter to be sure of your bearings or bushings. Specify JOHNSON BRONZE. For the past thirty years we have been a preferred source of supply on original equipment. All Johnson replacement parts receive the same exacting treatment demanded by car and truck builders. There are no second or third grades of Johnson merchandise. The next time you purchase bearings...be safe...specify JOHNSON BRONZE.

*Write for  
FREE  
Catalogue*



**JOHNSON BRONZE**  
*Sleeve BEARING HEADQUARTERS*  
455 S. MILL STREET • NEW CASTLE, PA.

## BODY SERVICE

(Continued from Page 31)

front, spacing the lining evenly while installing the bows.

Stretch the headlining at the front and install about six stay tacks across the tacking strip at the windshield header board, making sure the lining is spaced evenly.

Stretch the rear end of the headlining down and tack it to the tacking strip under the rear windows.

Cut the rear window opening in the headlining and cement the lining around the rear window and quarter windows.

Hook the lining over the sawtooth clips around the rear windows.

Stretch the headlining and force it under the metal retaining strip, with a dull putty knife, on both sides, starting at the rear and working to the front.

Cement and tack the headlining to the header board tacking strip.

Install the windshield garnish molding, center strip and sun visors.

Cut the opening for the dome light and install the dome light assembly and lens.

Install the rear seat back shelf trim panel.

Install the assist cords.

Install the rear window garnish molding.

Install the rear quarter glass garnish moldings.

Install the rear seat cushions.

Brush and clean the upholstery.

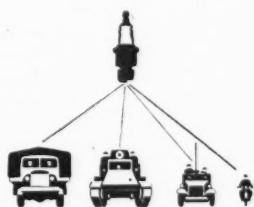
### Convention at Chicago

#### *Is Canceled by MEWA*

In a recent letter to members, H. R. Kerans, president of the MEWA, announced that the annual convention, scheduled for Chicago, Feb. 16 to 18, had been canceled, due to the war.



# CHAMPION SPARK PLUGS



Champion Spark Plugs have become a true ordnance materiel inasmuch as practically everything on wheels, that hauls men, munitions, armaments and supplies, is powered by engines equipped with spark plugs. This is, of course, a primary consideration with all of us, and Champion is proud to be a major source of supply.

We also recognize the fact that keeping the motor cars, trucks and tractors of this nation rolling is likewise important. For these constitute the nation's first and foremost means of transportation, and efficient transportation is what has made America great, and will be a mighty factor in our all out Victory drive.



We are doing everything within our power, and the limitations of material allotments, to meet the unprecedented demand for Champion Spark Plugs. We will not relax our efforts in this regard. Champion standards will always be of the highest—standards which have made the name Champion and the word "dependable" synonymous the world over.



*More Vital-  
More Dependable  
than ever!*

**IT PAYS YOU WELL TO STOCK AND SELL—CHAMPIONS!**

## VALVE JOBS

(Continued From Page 21)

perch, Pop led the way back to the car. He pointed out one cylinder. "Try the stone on that seat again," he said. "It looks to me as if that was our trouble."

Chuck brought the valve reseater over from the bench.

"I guess I ain't got the feel of this reseater yet," said Chuck. "When I was in vocational school we used to grind the valves in by hand or used a reamer."

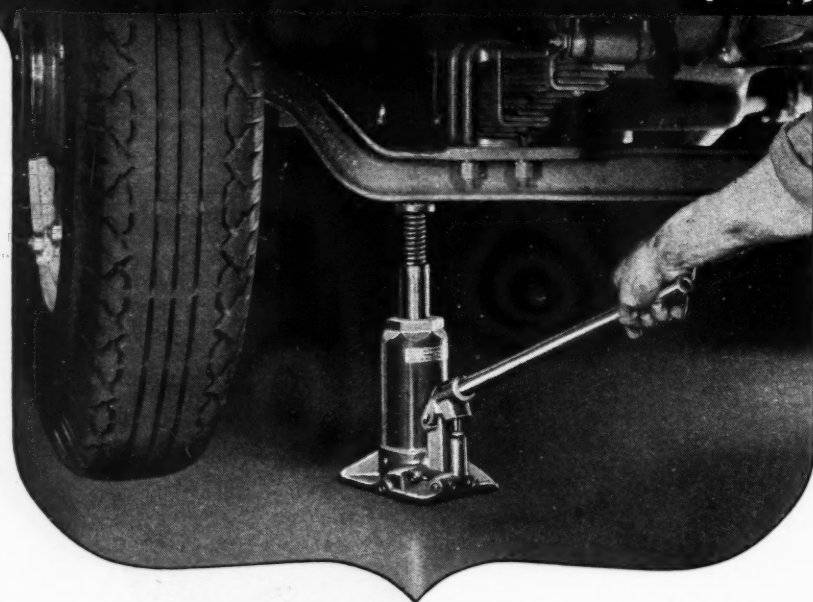
"I don't like to put in a rap for schools," said Pop, "because I ain't had much schoolin' myself and some folks might think it was a case of sour grapes. But this school we've got in Glenrock is still tryin' to teach kids how to fix Model T's."

"It used to be a pipe, grindin' valves by hand, but that was when the seats was right in the block. When they started makin' high-speed, high-compression engines, the cast-iron wouldn't stand up, so they started usin' alloy steel inserts. They're too tough for reamers. You gotta have a stone."



"Oh-Ho! So that's why you have windshield wipers on all the windows!"

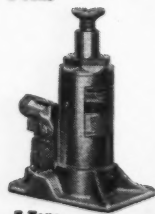
## ★ ★ War Restrictions On Sale Of Tires Means Jacks Will Be Needed More Frequently



## Every car and truck should have a HEIN-WERNER HYDRAULIC JACK



3 Tons



5 Tons

Here's something worth passing on to YOUR customers.

Since old tires must be driven longer these days, motorists are going to have more punctures and blow-outs. This means more tire changes on the road—which makes it important that the owner possess a dependable jack such as a Hein-Werner Hydraulic Jack.

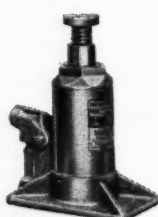
The H-W line includes Bumper-Lift Jacks for passenger cars, and truck jacks of 1½, 3, 5, 8, 12 and 20 tons capacity.

For details and latest prices, ask your H-W jobber or write us

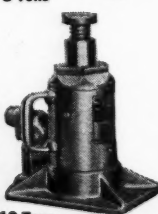
**HEIN-WERNER MOTOR PARTS CORP.**  
Waukesha, Wisconsin

**HEIN-WERNER  
HYDRAULIC JACKS**

Are Built Right and Priced Right



8 Tons



12 Tons

Under Pop's watchful eye, Chuck ground the seat again and Pop tested the pencil-marked valve in it. "That's got it," he said, smiling.

"Then I can put the head back on and finish it up?" asked Chuck.

"In a minute or two. But first I want to tell you about the guides. I meant to do it before. You might as well have no guides as ones that are worn too much." He dropped one of the valves through its port and tried to rock it back and forth. It wouldn't budge. "If that guide was worn," said Pop, "the valve would wobble, and if the wobble was more than five thousandths the valve and guide should be replaced. This one is OK because I took the trouble to check them after you got the head off and had to go out with the tow truck."

"Better put the valves back in now, kid. And remember what I told you about checking the tappet clearance."

"Oh, I know the clearance on this job. It's eight thousandths."

With a smile pulling up the corners of his mouth, Pop asked: "Hot or cold?"

Chuck's face went blank.

"I thought so," said Pop. "You don't remember. Well, you better have another look at the specifications in MOTOR AGE or the Chilton Flat Rate Manual. The clearance for some cars is given for a hot engine. On others, for a cold engine."

"I forgot," said Chuck.

"And when it says a hot engine it means a hot one—not just one you've turned over a few times. One maker recommends runnin' the engine 20 minutes before you check the clearance. On overhead valve jobs it's a cinch, but you have to be careful when you adjust the tappets on an L head engine while it's hot or you'll get burned. If you adjust them with the engine cold you've got some things to remember."

"Yeah, you said I had to get the cylinder on top dead center before the compression stroke. That's a job."

(Continued on Page 76)



# U.S. "War Time" Lube Maintenance Units



## U.S. BRAND LUBRICATORS

U. S. specialized brand lubrication units are stripped down for action and to conserve important raw materials. They are as efficient and practical as any pre-war lubricating unit ever built. Never before has there been such a national need for a lube maintenance unit to keep cars and trucks operating at maximum safety and efficiency.

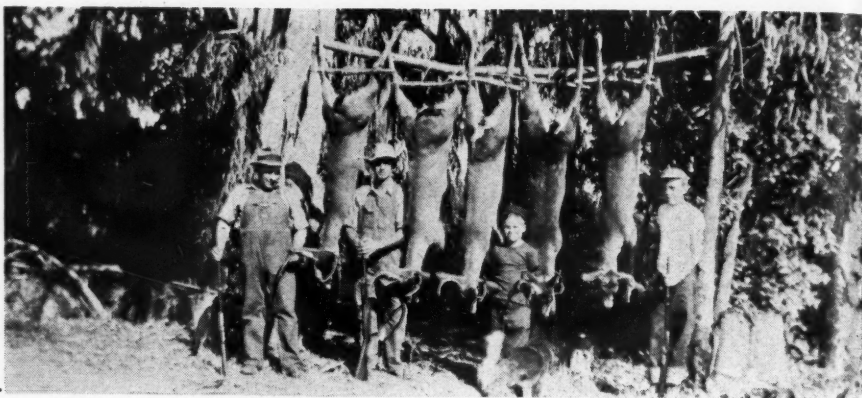
You can't keep "'em rollin'" if you don't keep 'em properly lubricated, their very life depends on lubrication, also the life of drivers and pedestrians. Here is an outstanding lube maintenance unit that is the very life-line of today's highway transportation.

U. S. portable, air operated chassis lubricating units are equipped with famous, air operated patented "Jack-in-the-Box" cover, so that the cover, pump, hose control nozzle and suction pump is automatically raised up out of the way while changing grease drums.



THE UNITED STATES AIR COMPRESSOR COMPANY - CLEVELAND, OHIO  
AIR COMPRESSORS \* GREASING EQUIPMENT \* HYDRAULIC LIFTS

Henry Mann, left, operator of Mann's Garage, Hughson, Cal., and party with the deer they killed on the opening day of the last open season. Left to right are Mann, Bryan, Dow, W. Dow, and Mann's son, Richard.



## Help Get Workers to Their Jobs



## By Keeping More Cars on the Roll

**Y**OU automotive mechanics can help the war effort, by keeping America's cars and trucks rolling steadily. If you own Van Dorn Electric Tools, you are all set. For in a pinch like this, the famous POWER of Van Dorn Tools really delivers! Pick up your Van Dorn Drill, Sander or Grinder and see how fast you

can sail through tough jobs. They don't buck, don't slow down. You get this *plus* POWER, torque, speed and stamina, because Van Dorn Tools are *quality-built*. That's why you and other better mechanics rate Van Dorn "tops" as automotive tools. The Van Dorn Electric Tool Co., 727 Joppa Road, Towson, Md.

**"Van Dorn"**  
(DIV. OF BLACK & DECKER MFG. CO.)  
**PORTABLE ELECTRIC TOOLS**

## Buick Launches Service Campaign for Dealers

The whole service resources of the Buick Division of General Motors Corp. will be placed behind a car conservation program which was launched by Buick in January through more than 3,000 dealers throughout the country, according to an announcement by W. F. Hufstader, general sales manager.

The Buick effort will be directed through a "Conserve Your Car" program, conducted co-operatively between Buick dealers and car owners who are normally their customers.

The Buick C-Y-C campaign, which was developed under the direction of C. W. Jacobs, parts and service manager, with the assistance of his field staff and service representatives of dealers, is further designed to help dealers enlarge and stabilize their service business.

The program includes a simple, straightforward informal agreement between owner and dealer.

## Blitz Buggies Ordered

Edsel Ford, president of the Ford Motor Co., has announced that within 10 days in January the company has received Army contracts for military vehicles totaling nearly \$84,000,000.

"The orders call for various types of trucks and some passenger cars used as Army staff cars, but the big bulk of the contracts is for the Army reconnaissance cars or 'blitz buggies' as they are commonly called," Ford said.

## Buys Cleaning Product

The Magnus Chemical Co., Inc., Garwood, N. J., announces the purchase of the product Dy-Kle-N, formerly manufactured and sold by the Southern Graphite Corp. of Norfolk, Va.

This product is a combination dye and cleaner for automobile upholstery. One pint bottle is said to be sufficient to do a large size sedan. It is packaged in cases containing one dozen pint bottles.





**FOR YOU IN '42**—Full-page, four-color Stopper national magazine ads by American Brakeblok, selling safe brakes and all brake services to 15,000,000 magazine readers.

**FOR YOU IN '42**—Three-color outdoor Stopper identification signs, the same signs featured in national ads; making each shop that has one, part of a big program for more brake service.

**FOR YOU IN '42**—Additional Stopper display material, national magazine ad tie-ups, sales helps — **PLUS** — American Brakeblok Brake Lining for long mileage, smooth stops, minimum adjustments, all of which mean real Safe-Stop Brake Service.

**FOR MORE BRAKE SERVICE PROFITS IN '42  
ASK ABOUT AMERICAN BRAKEBLOK'S  
NATIONAL "STOPPER PROGRAM"!**

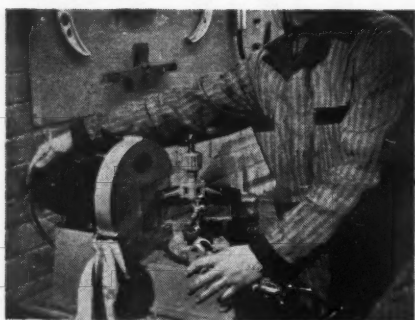


**MASTER STOCKS IN 38  
NAPA WAREHOUSES**

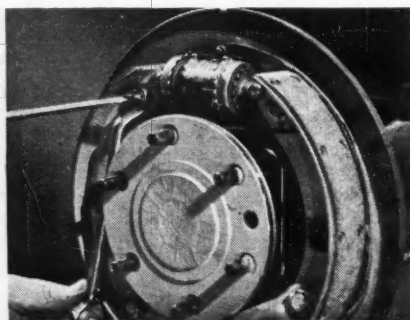
**Jobbers everywhere give prompt  
service.**

American Brakeblok Division of The American Brake Shoe & Foundry Co., Detroit, Michigan

# BRAKE SERVICE IN TALKIE



Proper brake shoe reconditioning includes grinding to remove high-spots in lining.



Anchor pin adjustment is important for full-surface contact between lining and drum.

Plans are now being made for country-wide showings of the new talking movie, "Keep 'Em Holding," produced by Thermoid Co., Trenton, N. J.

The new film covers the entire field of hydraulic brake operation and approved service methods, starting with the operating principles of the hydraulic system itself, and methods for quick location and correction of troubles in the system. It shows in complete and accurate detail the complete adjustment operation on every popular type of hydraulic brake in use today—Bendix, Ford, Huck, Lockheed and Hi-Tork. It also covers the correct procedure for brake-shoe reconditioning, relining and precision fitting of the relined shoes to the drums. Another very helpful portion of the film contains valuable pointers on fast, effective trouble-shooting.

The film covers this broad and complex subject in so simple and direct a form that anyone interested in modern brake service methods will gain a wealth of information from seeing it.

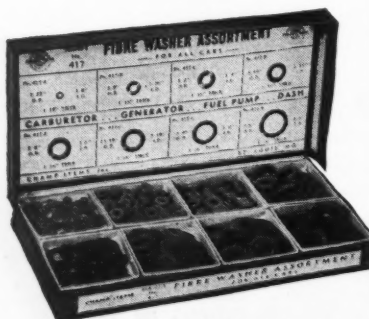
Preview showings of the film have been made to the entire Thermoid organization in a number of regional meetings. Arrangements are now being made for dealer meetings to be sponsored by Thermoid Distributors in all parts of the country. The film will also be made available to trade and vocational schools.

## Keep 'em rollin' for VICTORY...

Minutes count — men on Wake Island fought to give us time — don't waste it — make America 'hum — use time savers to Keep 'em rollin' on the highways for Victory. Champ-Items Short Cuts are time savers — do the job right.

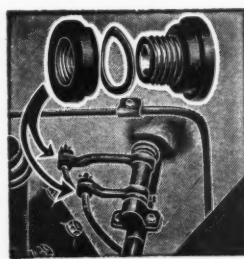


**No. 416 Phillips Self-Tapping Auto Body and Trim Screw Assortment for all cars and trucks**  
Cut their own threads and provide a tight fit that will not jar loose. Phillips head screws are used on all trims of most late model cars. Complete specifications in lid of box. Two hundred and thirty-two screws and speed nuts in this assortment No. 416. Also assortment MB416 in metal container with 464 pieces. List 4c per screw



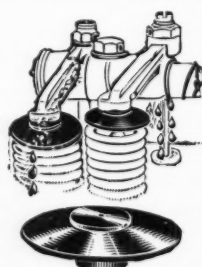
**No. 417 Fibre Washer Assortment**

This assortment contains 8 sizes of fibre washers generally used on carburetors, fuel pumps, generators and places where a gasket or insulating washers of fibre are used. 300 washers to assortment. List 1c each



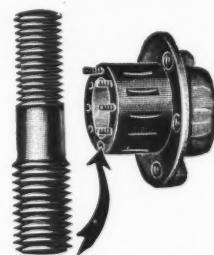
**No. 414 Gear Shift Lever Bushings**

These fibre insulated bushings replace the standard rubber bushing and make a permanent repair. Can be easily installed without removing the gear shift lever arm. For 1940 (late), '41 and '42 Fords and Mercury. List 30c each



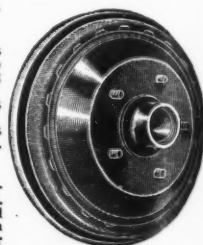
**No. 455 and 955 Oil Regulator and Valve Silencing Caps for Buick and Chevrolet**

Reduce excessive oil consumption at valve guides. Stops smoking. No sticky valves. No. 955 for all 1935-42 Chevrolet cars and trucks. List \$2.75 per set  
No. 455 for all 1931-42 Buicks. List \$4.00 per set  
U.S. Pat. Nos. 2,222,792-2,241,498.



**No. 407 Oversize and Standard Rear Wheel Studs for all trucks**

These oversize studs are used where threads are stripped or stud is broken off; or where wheel flange holes and axle flange holes are worn. Sizes to fit all popular trucks. Nos. 407-A, B, C, F, G & I. List 20c each  
Nos. 407-D, E, H. List 35c each



**No. 988-C Brake Drum Spring**  
—is designed to stop squeal on Chevrolet drums—made of best material. Easily installed. For Chevrolet and cars with 11" drum. List 65c each  
Also No. 988 for V-8 Fords and other cars with 12" drums. List 75c each



ORDER FROM YOUR JOBBER

**CHAMP-ITEMS, Inc.**  
6191 MAPLE AVE., ST. LOUIS, MO.





## DETROIT LETTER

(Continued from Page 41)

try and it is presumed that these will be able to furnish parts provided the materials are available.

H. Herbert Hughes, metal and materials expert for the AMA, offered some timely advice on the parts problem before the annual meeting of the Society of Automotive Engineers at Detroit last month. Although the rubber problem as related to tire manufacture is well known, the effect of the rubber shortage upon replacement parts also presents difficulties. Only orders assigned an A-3 priority rating or higher can be filled. This includes heavy trucks but passenger cars and light trucks, which have only an A-10 rating, are excluded. In addition, January passenger car quotas had to be filled out of rubber replacement parts on hand with the manufacturers and dealers before additional parts could be made. This means that temporarily, at least, there will be a serious shortage of fan belts, motor mountings, hose connections and other rubber parts unless the order is relaxed.

Copper for replacement parts, such as radiators, also is becoming more scarce as the demand for shell casings and similar war uses increases. In recent months only 50 per cent of the A-10 priority orders for refined copper have been filled. Radiator manufacturers are endeavoring to remedy the situation by development of a radiator that employs half brass and half steel, materially reducing the copper content. Corrosion problems presented by this design are the chief drawback, although the steel is used chiefly for the fins.

The aircraft industry's demands for aluminum has virtually taken that metal out of the motor car, but it is still needed for such replacement parts as brake pistons and truck and bus engine pistons.

Tin and lead are becoming scarcer and the former has been banned from use in body solder. Replacement batteries are not yet restricted but some steps have been taken to prevent hoarding of them. Methyl alcohol and glycerine are banned from anti-freeze use due to their employment in manufacture of explosives.

Despite upward revision of January's passenger car quota to 204,848 units so plants might complete their manufacture of these vehicles and light trucks to make way for all-out war production, output for the month of both light trucks and cars totaled an estimated 277,500 units. This was 47 per cent less than the 524,058 vehicles produced in January, 1941, and the smallest for the month since 1938, when 226,952 units were assembled. It also marked a 4 per cent decline from December's total. Manufacturers were permitted by the War Production Board until Feb. 10 to complete their January quotas in order

to use up materials on hand, provided this did not interfere with conversion to war production. February's quota for medium and heavy trucks for civilian use has been set at 53,435 units but after March 1 the quota may be greatly reduced.

Increasing the Army to 3,600,000 men will compel a tremendous stepping up of Army truck production, possibly at four times the present output of approximately 25,000 military vehicles monthly. This will necessitate cutting down civilian truck output. Light trucks and passenger cars for Army use will be withdrawn

from the stock of approximately 130,000 vehicles "frozen" in dealer stocks by the government for such needs.

New passenger car retail sales in December totaled 135,821 vehicles, according to the AMA, a drop of 42 per cent from the same month of 1940 and the smallest for the month since 1937. New truck sales of 78,999 units were up 31 per cent from December, 1940, and the largest for the month on record. Total retail sales of 264,820 units registered a slight gain over the 262,798 vehicles sold in the preceding month.



**A WARNING!**  
*About* **BEARINGS**

**OLD BEARINGS** must now be made to run just as long as possible. Modern equipment for washing, drying and repacking together with proper lubricants is now a "must". Every service man should consult his wholesaler and every wholesaler should spare no effort to educate service men on modern scientific bearing maintenance.

Every worn ball bearing that must be replaced should be turned in to the wholesaler for reconditioning. Ahlberg Ground Ball Bearings are the answer to the bearing shortage which is becoming more acute each day. These scientifically reconditioned ball bearings will provide new bearing performance for replacements just as they have served thousands of users for more than thirty-five years.

You can play a definite part in the defense program by broadcasting careful maintenance of

existing bearings and by collecting worn ball bearings for Ahlberg processing. Write for AGB particulars. Let's keep 'em rolling.

*Let's Keep  
'em  
Rolling*

**AHLBERG**  
**BEARING COMPANY**  
★ 3028 WEST 47th STREET • CHICAGO, ILL. ★  
Out West it's **PRECISION BEARINGS, INC.** Los Angeles



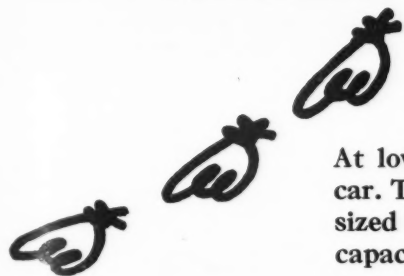
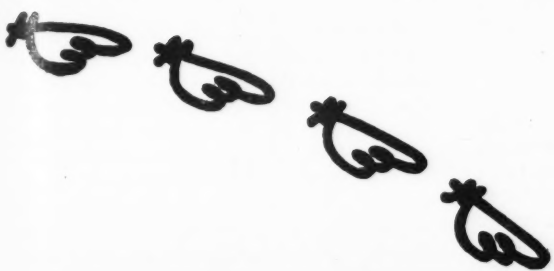
When they kick about  
performance . . . . it  
may be the wiring

**Wiry Joe**  
WIRE AND CABLE  
PAWTUCKET • RHODE ISLAND



*Wiry Joe Says:* Top-quality Wiry Joe wire and cables have their quality built-in. In Battery Cables, for example, after the terminal and connection are fastened to the cable, they get a heavy coat of lead. This extra protection aids in resisting the acid which would corrode the heavy brass terminal.





At low winter temperatures, it takes more current to start any car. The battery has a tougher job—is under added strain. Undersized and worn out battery cable that holds back full battery capacity, or lets it leak away, is a frequent cause of hard starting.

So make a thorough check on the wiring on every job that comes into your shop. It's your chance to forestall customer complaints, build good-will, and make a *plus* sale at the same time.

Wiry Joe battery cable is top-quality, full-gauge, full-load cable embodying many exclusive features for longer life and greater efficiency. Yet Wiry Joe *costs less*, lets you do a first class job at an attractive price . . . and still have a longer profit.

✓ *Check the wire on every job!*

## MAKE TIRES LAST LONGER

(Continued from Page 28)

The importance of checking the pressure and the valve and valve cap every week cannot be overemphasized, as a loss of only 5 lb. pressure in a conventional passenger-car tire will reduce its effective life about 10 per cent. This would be equal to 2000 miles if the average life is considered as being 20,000 miles. Checking the inflation pressure every week will quickly disclose any slow leak and in that way eliminate, or at least reduce,

the possibility of being forced to make a tire change on the road. This check will also indicate the need for tire valve caps or new valve insides. Tires should also be inspected each week for nails, glass, etc., as their removal will prevent them working through the casing and causing a puncture. At the same time, cuts in the casing should be repaired. Periodically tires should be dismantled and thoroughly inspected inside and out.

Of course, all mechanics know that one of the major causes of short tire life is misalignment of the wheels as the scrubbing action soon files off the rubber. A bent chassis frame or shifted axle will have the same effect. Consequently it is important to check caster, camber and toe-in, and also make the examination for a bent frame and shifted axle at 5000-mile intervals. Of equal importance is proper wheel balance, as unbalanced wheels will bounce on the road and the spinning wheel will quickly file off the tread. Defective shock absorbers will also permit the wheels to bounce off the road surface with the same effect.

When explaining the various factors controlling tire wear, particular emphasis should be given to the effect of car speed. This is brought out in one of the illustrations from which it can be seen that, to get normal tire life, car speeds should not exceed 35 m.p.h.

### New Service Program

#### Announced by Hudson

A long-range service development program to "keep 'em rolling" for Hudson owners was revealed recently in Detroit by George H. Pratt, general sales manager of the Hudson Motor Car Co.


The program, according to Pratt, had its beginning many months ago, as soon as it became apparent that the national defense effort would necessitate a curtailment of new car production. The factory service department and the Hudson distributor and dealer organization decided on a joint plan of action.

The plan is based on Hudson's unusual system of distribution, and provides for the reorganization and stocking of major parts depots in 82 distributor cities. Pratt pointed out that these depots are strategically located throughout the country.

As a further step, dealers have been encouraged to enlarge and modernize their service departments, so they can give more efficient service to their owners and so they can replace revenue from new car sales with increased repair and maintenance business. They have also been asked to stock parts and accessories according to a master plan.

### Blueprint Reading

The second edition of "Simple Blueprint Reading With Special Reference to Welding" has been announced by The Lincoln Electric Co., 12818 Coit Road, Cleveland, Ohio. It is designed to instruct welders, mechanics and others how to read blueprints, and places particular emphasis upon the meaning of symbols used in drawing various types of welded joints. Price 50 cents in the United States, 75 cents elsewhere.




## RUBBER IS AMMUNITION DON'T WASTE IT!

Defense depends on rubber. The many intricate rubber parts Continental is making for the Army and Navy are as vital in the defense program as any metal or chemical products. But rubber is precious and must be conserved. Don't waste it. Guard against errors, prevent mistakes and avoid rubber-wasting rejections.

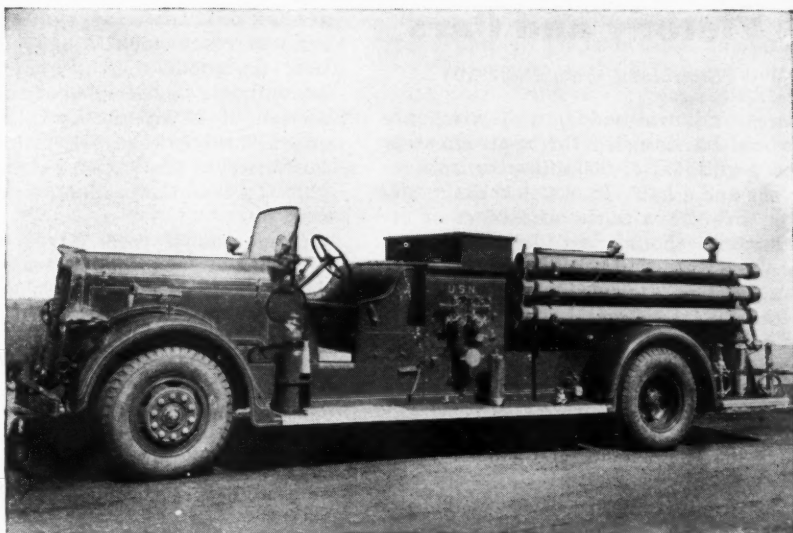
Every ounce of rubber we save not only helps in our defense work—Continental's No. 1 job today—but also helps in the services we are rendering wherever possible to Continental customers. For those customers, too, are saving rubber wherever they can—making sure that the rubber products they order are made right for long service and showing great patience when their deliveries take second place to government requirements.

*From Factory Bulletin Board of the*  
**CONTINENTAL RUBBER WORKS**  
*MAKERS OF THE VITALIC LINE SINCE 1903*  
**ERIE, PA., U.S.A.**

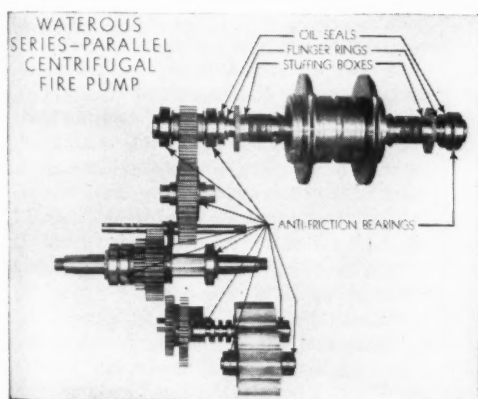




# Defense Against Fires On SKF's



BUILT BY WATEROUS CO.



Protecting cantonments, naval training stations, munition plants, etc., is too big a job to take a chance on bearings. That's why the men in charge of these Trucks—like fleet owners in defense industries—keep SKF Bearings in mind. Not only on vital locations of the truck itself, but on the Waterous 1000 G.P.M. Centrifugal Fire Pump, first choice goes to SKF bearings for long-time, low-cost performance. Whenever an SKF finally goes off duty, another SKF invariably takes its place.

4955

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA.

## Victory and Cars

(Continued from Page 19)

tires are retreaded, the tire life would be extended for approximately an additional 15,000 miles, or another year and a half. In other words, existing tire life with the assistance of re-treading should last for about 2½ years. Since it is possible to retread tires more than once, this estimate does not seem unduly optimistic.

In the meantime, the government's synthetic-rubber project will develop so that by 1943 it is expected that the

annual production of synthetic rubber will reach 400,000 tons. In addition, the production of guayule rubber will also be extended. In this connection, it is interesting to note the guayule rubber has been a factor in world rubber production since at least 1906. In 1940 the production was 3634 tons.

Crude rubber from Africa and the Amazon can also be increased from the present 34,000 tons. Consumption of rubber in the United States for both civilian and military purposes in 1940 was 600,000 tons. So by the end of 1943, the rubber situation should

be well on the way toward solution.

Turning now to the parts situation, it is true that there are many shortages at the present time but the government has taken belated recognition of this situation and has permitted an increase in replacement parts production as indicated at the beginning of this article. However, a shortage of parts actually means more work for the repair man, for under such circumstances, it becomes necessary to salvage the original part which entails more labor and ingenuity than simply replacing a worn part with a new one.

It is important that production of parts, such as piston rings, valves, ignition parts and others that affect the economical operation of the cars, be continued. Otherwise both fuel and oil will be wasted. It has been estimated that more than 468,750,000 gallons of oil and 350,000,000 gallons of gasoline would be wasted annually if piston rings were not replaced.

However, it must be realized that some manufacturers have had to withdraw completely from the production of parts and many others are able to use only a part of their normal capacity to meet the needs of the trade. Those who are continuing to manufacture automotive products, either in whole or in part, are up against serious difficulties in getting raw materials or processed materials needed in the manufacture of their product.

Servicemen, therefore, have many serious problems, and can't expect to continue business as they have been accustomed to in the past. Ordering of needed parts and materials has to be done much more intelligently and with full appreciation of what everyone in business is up against. Once that is accepted, there are a number of things that can be done to help keep a steady stream of needed parts and materials flowing into the shop.

To meet improper buying habits and to assure all their customers of an equal opportunity to obtain needed parts, growing numbers of manufacturers have adopted some form of allotment or rationing plan. Under such a setup, orders from all jobbers are scrutinized carefully and shipments are limited to a predetermined percentage of purchases made by jobbers during the same period a year ago. Manufacturers are interested in seeing that all their customers receive an equitable share of their products.

This rationing of parts to jobbers is still somewhat new and, as a result, not many jobbers have yet begun to allot parts to their customers, but it is evident that jobbers who want to treat all of their customers fairly will follow the lead of the manufacturers.

This situation suggests that it would be wise for every service station to check up on its buying habits. Jobbers are naturally going to prefer to make their merchandise available to their regular customers. So that it

**For the Defense of Car and Country**

**CARE WILL SAVE YOUR CAR!**

**... "JOIN UP" TODAY  
HELP KEEP CARS ROADWORTHY  
ON THE HOME FRONT**

Ask your Jobber at once for this NIEHOFF FREE Display Material that sounds the bugle call for Home Defense.

Make your shop a base for arming motorists against wasted oil, gas, power and needless wear on moving parts by topping off each "Tune-Up" job with Genuine NIEHOFF Parts. This complete campaign—"Care Will Save Your Car"—can be yours free of charge. Ask your jobber TODAY.

**C. E. NIEHOFF & CO.**  
4925 W. Lawrence Avenue, Chicago, Ill.

**BRANCH:**  
1342 S. Flower St.  
Los Angeles, Calif.

**NIEHOFF**

**TAKE OFF With NIEHOFF TODAY**





"Listen, saphead, where did you get this top dressing?"

is going to pay each shop to establish itself as a regular customer with one or not more than two topflight jobbers. Furthermore both jobbers and servicemen must realize that, when they are unable to secure supplies, the difficulties are the result of the war and not the suppliers' fault.

Keeping the cars running is, therefore, not an easy problem, but the majority of the 32,000,000 passenger cars and trucks must be kept running. In fact, they have to continue operating if the war is to be won. Without them, many workers will be unable to reach the arms and munitions plants. In England, when the war first started, manufacture of replacement parts stopped, but it had to be restarted as the government found that it was necessary to keep the cars rolling.

## NEWS

(Continued from Page 42)

everything sold, the government was urged to attack the problem of controlling price by three successive steps:

1. Action against individual offenders who profiteer.
2. Use publicity in a careful manner to tell the public about scarce items, indicating what government thinks a fair price on such items should be.
3. Apply controls to selected items when other methods fail.

## HOPE FOR TIRES

SINCE new tires were denied to the general public in December, as the result of impairment of our Far Eastern rubber supply, the first note of cheer was sounded on Jan. 12 when


Jesse Jones, Federal Loan Administrator, announced that the country's production of synthetic rubber would be stepped up to 400,000 tons annually by July of next year. Jones held out no hope that the present restrictions on the sale of new tires for civilian use could be relaxed immediately, but his announcement does lighten the future outlook.

Jones pointed out that our normal consumption of natural rubber is 600,000 tons a year. Thus the capacity of synthetic plants 18 months from now would amount to two-thirds of our needs. Unfortunately, from the standpoint of tire users, our wartime

needs, Jones indicated, will be approximately 800,000 tons annually, which seems a little high. Assuming that this figure is correct, synthetic rubber will supply only half our requirements until the war ends or the Japs are cleared out of Malaya and the East Indies.

Undoubtedly, some rubber is already afloat on its way to this country, and we may get a trickle of the raw product so long as any plantations are defended from the Japs. And it is probable that the production of rubber from quayule will increase under the stimulation of war, and

(Continued on Page 72)




# FOR WANT OF A DROP.....

For want of a drop of oil at the right time and place many new machines have been seriously damaged during initial run-in following assembly . . . To avoid this waste, more and more manufacturers depend upon "dag" colloidal graphite . . . Send for Technical Bulletin No. 112S and name of local supplier.

ACHESON COLLOIDS CORPORATION

PORT HURON, MICH.

"dag" is a registered trade-mark of Acheson Colloids Corporation.



## NEWS

(Continued from Page 71)

that we'll get some rubber from Brazil and Africa. Thus the gap between the 400,000 tons of synthetic we shall be making and the estimated 800,000 tons we shall need, should be closed somewhat.

Even if the greatly increased production of synthetic rubber is unable to provide tires for private owners, it should, with the supply now on hand, avert a shortage for military use. And, after the war, it should

make us almost independent of foreign rubber plantations, regardless of who owns them. That should be particularly gratifying, in view of \$1.25 a pound we were paying the British after they enacted the Stevenson price-fixing act in 1922.

Regulation of new-tire prices was announced by Leon Henderson, Price Administrator, late in December, and last month this was supplemented with ceilings on retreaded and re-capped tires. These ceilings seem high enough to absorb a rise in costs considerably over present levels.

The maximum price of a tire re-

capped or retreaded with the first grade of camelback, for example, is \$9, including the price of the carcass. This is about \$2.50 higher than a similar tire three months ago. The complete list of maximum prices follows:

### PASSENGER CARS

Size	Basic Tire Carcass	Retreading, Full Capping or Top Capping		Retreaded or Recapped Tire Complete	
		(1)	(2)	(1)	(2)
6.00-16.....	\$1.50	\$7.50	\$6.45	\$9.00	\$7.95
6.25-16.....	1.50	8.25	7.10	9.75	8.60
6.50-16.....	1.50	8.70	7.50	10.20	9.00
7.00-16.....	1.50	10.35	8.95	11.85	10.45
5.25-17.....	1.50	6.55	5.55	8.05	7.05
5.58-17.....	1.50	7.10	6.05	8.60	7.55

### TRUCKS

Size	Basic Tire Carcass	Retreading or Full Capping		Top Capping	
		(1)	(2)	(1)	(2)
6.00-20 (30-5) (6-ply).....	\$4.20	\$7.60	\$6.75	\$6.50	\$5.70
6.00-20 (30-5) (8-ply).....	6.00	8.85	7.80	7.50	6.55
6.50-20 (32-6) (8-ply).....	6.00	12.45	10.95	10.55	9.30
6.58-20 (6-ply).....	4.50	10.00	8.80	8.50	7.45
7.50-20 (34-7) (10-ply).....	9.60	16.20	14.25	13.80	12.10
7.50-24 (38-7).....	7.20	17.15	15.05	14.60	12.85
8.25-20.....	10.80	21.85	19.15	18.55	16.30
9.00-20 (36-8).....	12.00	26.35	23.15	22.35	19.70
12.00-20 (11.25-20).....	16.80	43.95	38.60	37.35	32.85
12.00-24 (11.25-24).....	16.80	47.45	41.75	40.30	35.40
9.00-36 (11-36) (tractor).....	9.90	34.50	.....	.....	.....

(1) Indicates best quality camelback.

(2) Indicates second best.

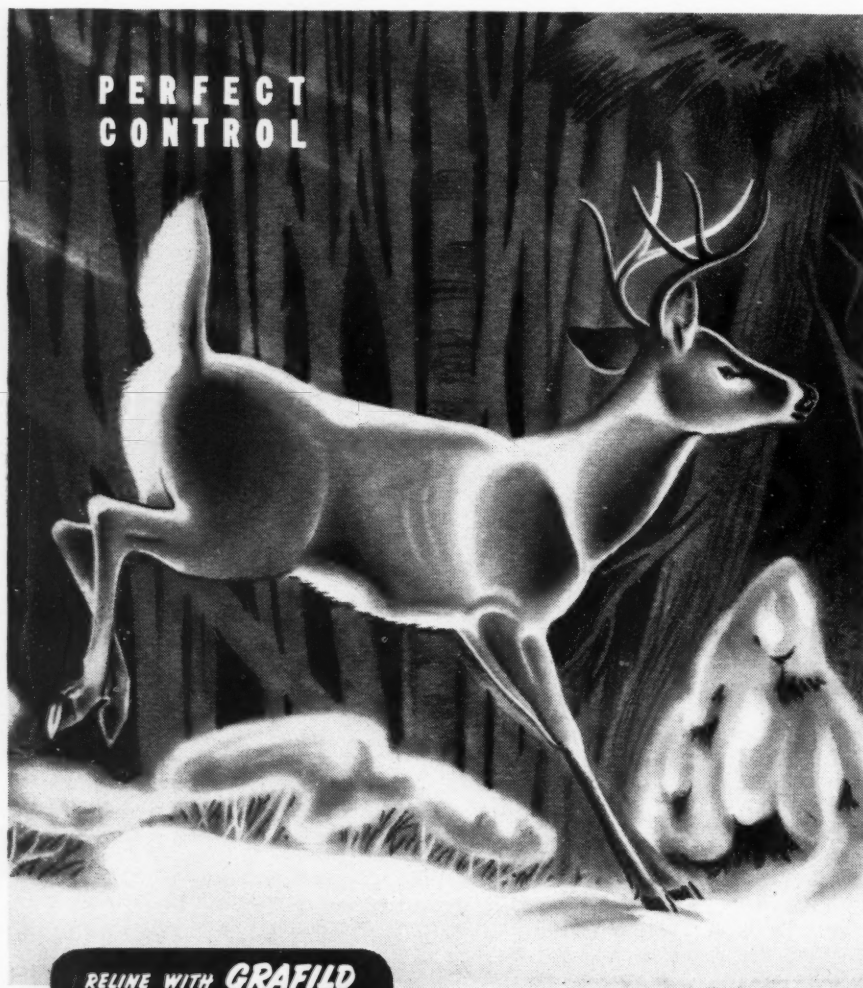
The seriousness of the rubber situation is understood by most persons but many of them overlook the tin situation. With the great bulk of our tin coming from Malaya, supplies of the metal have virtually ceased. This is certain to be reflected in a shortage of tin for replacement parts, since it is used not only for plating many pistons but also in virtually every type of engine bearing.

### W. Kenneth Norton

W. Kenneth Norton, manager of the Defense Materiel Relationships office in Washington, D. C., for General Motors Corp. and former distribution manager of General Motors Overseas Operations, died Jan. 9 at Cocoa Rockledge, Fla., where he had suffered an attack of appendicitis just before Christmas. He was 45 years of age.

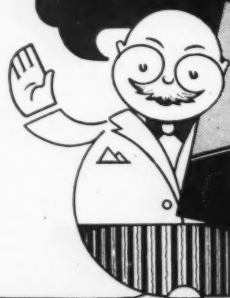
Norton, a graduate of Cornell University with a Bachelor of Architecture degree in 1918, began his business career in 1920 as associate partner in an architect firm at Omaha, Neb. In 1922 he resigned to become secretary and treasurer of Rockwell Co., Inc., at Corning, N. Y., and in 1928 he entered the General Motors Export Division in New York City. He assumed his Washington position June 30, 1940, but maintained his residence at Smithtown, L. I.

Norton also spent one year overseas during the World War, having previously held a Captaincy in the air service of the United States Army. At the time of his discharge he was head of the Technical Section of the Bombing Division of the Air Service.



PERFECT  
CONTROL

RELINE WITH **GRAFILD**  
... and get that  
**CERTAIN** feeling!

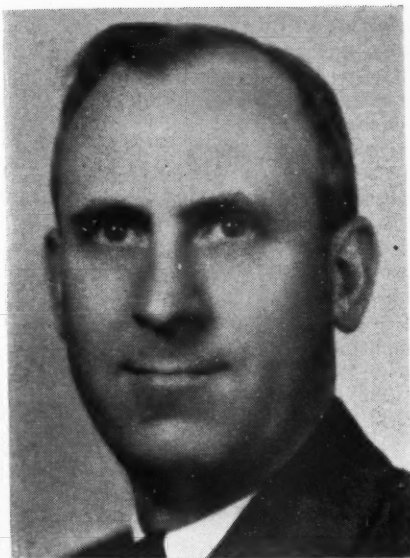


**BRAKE**  
**GRAFILD**  
**LININGS**

ROLLS  
SETS  
SLABS  
BLOCKS  
•  
CLUTCH  
FACINGS

**WORLD BESTOS CORP., Paterson, New Jersey**





Roderick B. Cave

### Cave Is Named to Head

#### Penna. Rubber Sales

Howard W. Jordan, president of Pennsylvania Rubber Co. with factory and principal offices at Jeannette, Pa., and originator of the famous Pennsylvania Vacuum Cup tire and Pennsylvania tennis balls, announces the appointment of Roderick B. Cave as sales manager and of Paul C. Mathewson as factory manager. Cave comes to Pennsylvania Rubber Co. directly from Electric Auto-Lite Co. of Toledo, Ohio, where he occupied the position of assistant sales manager, Merchandise Division. Mathewson was formerly factory superintendent of the Armstrong Rubber Company, Inc., West Haven, Conn.

### Resumption of ASI Shows

#### After War Voted by NSPA

The National Standard Parts Association at its eighteenth annual convention in December at Chicago unanimously voted to negotiate for a resumption of the ASI show after the war. The show, scheduled for Atlantic City, N. J., this month, had previously been canceled. The resolution on post-war shows read in part:

"While it is very obvious that no further shows should be planned until the war has been won and a return to business promotion can be sensibly and patriotically made on the part of industry business, it nevertheless is important that this association provide now for this eventuality so the machinery readily can be set up when that time returns.

"Therefore, it is resolved by the membership of the National Standard Parts Association that the Board of Directors be empowered to instruct the president of the association to proceed with such cooperative negotiations as may seem wise and appro-

priate at that time toward the resumption of and to complete arrangements for a joint industry show under such auspices and planning as will be best for the industry as a whole and in keeping with such considerations as will make for efficiency, economy and good business."

### Practical Arc Welding

A new textbook covering in detail all phases of electric arc welding has been published by Hobart Trade School, Inc., Troy, Ohio. The book, written by W. J. Chaffee, contains 516 pages and 512 illustrations. The first

part contains general welding information, followed by the complete series of arc welding lessons as they are offered in the Hobart Trade School, giving preliminary instructions and advanced studies so that the manual will be of value to the beginner and also to the arc welding specialist. A complete dictionary of welding terms and 20 pages of tabular data for operators and designers forms the fourth and fifth sections of the book. It is available direct from the publisher, from any authorized Hobart arc welding equipment dealer, or at most book stores. Price \$2.00.

## Snap-on's NEW SPEED HONE

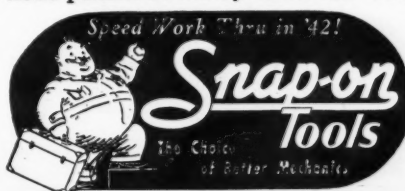
enlarges, trues and finishes holes  
in all types of bushings and bearings — in all kinds of metal . . .

now  
you can handle  
more honing jobs..faster!



Here's skilled help for  
your shop when you need  
it most . . . a hone anyone can use  
to get perfect results . . . a hone that  
saves more time, handles more work, does a better job, at lower cost.

Just 'an [inkling of what Speed Hone will do is the fact that it hones *both* piston bosses, or both king-pin bushings in one operation... gives you fast hand feed without overcutting... can be set to .00025" accuracy... turns with any 1/2" drill... or hand-wrench... has no stones to sharpen, no extras, just 2 kinds of abrasive sheets that handle all work on all metals. Capacity 11/16" to 1 1/4". Each hone packed in sturdy metal case with complete set of blades and abrasives.



For FREE demonstration see your  
Snap-on salesman, or write . . .

## SNAP-ON TOOLS CORPORATION

8036-B 28th Ave. Kenosha, Wisconsin

## Our Industry at War

To conserve tin, the WPB has clamped down on the use of this metal for almost every civilian use, except in tin-plated cans and containers, and one of the uses banned is tin for automobile body solder. In the three months ending March 31, only half as much tin may be used in making solder as was used in the first quarter of 1940. After March 31, the use of tin for this purpose must cease.

All other users of tin are forbidden henceforth to use more than one half

as much tin as they used in the first quarter of 1940.

The only exceptions are manufacturers of goods for delivery under the Lend-Lease Act, of products necessary to comply with Underwriters' regulations, for plating cans and containers, and to complete contracts under A-1-j or higher priority ratings.

This drastic curtailment is necessary, the OPM explains, because tin supplies from British Malaya have

been cut off by the Jap invasion. The area grabbed by the Japs formerly supplied more than 80 per cent of the normal U. S. consumption of 100,000 tons a year.

\* \* \*

The outlook for anti-freeze is not brightened by the OPM order of Jan. 7 forbidding the further use of methyl (wood) alcohol for anti-freeze. Makers are forbidden even to use stocks of this alcohol already on hand to produce anti-freeze. Persons holding such stocks are required to report the details to the OPM and to hold the stocks for such disposition as the OPM may elect to make of them.

In the curtailment order, the OPM declares that substitutes for methyl alcohol are available. It is a little hard to imagine what they can be, since virtually the entire output of ethylene glycol is being taken by the Army and Navy, and liquor distillers were recently required to limit their output to 60 per cent so that more grain (ethyl) alcohol could be diverted to munitions making.

Stocks on hand no doubt will get car owners through the present winter but, in the face of these restrictions, anti-freeze for civilian use may become a rarity before next winter.

\* \* \*

Petroleum Coordinator Ickes gets back into the headlines—though small ones—for the first time since the gas-shortage scare of last summer. At his request, the OPM last month issued an order forbidding the erection of new gasoline filling stations. At the same time, it forbade the drilling of new oil wells unless consent is obtained from other property holders within a 40-acre area. Both moves are said to be designed to conserve vital war materials.

\* \* \*

Following close upon the announcement that the sale of new tires would be banned, except to certain restricted classes of buyers under the rationing plan, Donald M. Nelson, director of WPB, has issued an order forbidding the equipping of new passenger cars and of trucks less than 1½ tons with spare tires. "Producers, dealers or any other person," says the order are prohibited from "equipping, selling, shipping or delivering" vehicles with a spare or extra tire.

\* \* \*

Control of rubber was tightened in one of the first orders issued by the War Production Board. Although manufacturers of tire-repair materials may use each month 100 per cent of their average monthly consumption of latex during the 12 months ended March 31, 1941, express permission must be obtained from the WPB to consume rubber and latex in the making of retreading and recapping material.

The products listed by the WPB



## He asked us to send them to ICELAND!

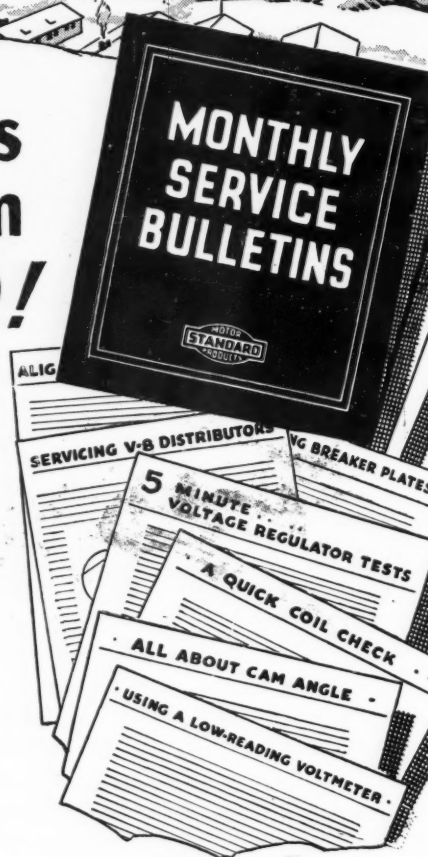
PLEASE mail my regular copies of your Monthly Service Bulletin to Iceland. That was the substance of a note we received from a soldier-mechanic, transferred to Uncle Sam's far Northern outpost. He did not want to miss a single issue!

Nothing could better illustrate the value of these Service Bulletins. The information they offer on ignition questions is eagerly awaited every month by thousands of automotive mechanics, military as well as civilian.

"Standard" and "Blue Streak" Products, giving you many exclusive features—and Standard's Free Service Bulletins, which help you to solve your daily problems—show how well we understand the repairman's needs.

With such a set-up there is little wonder that the Standard Line has become so popular!

STANDARD MOTOR PRODUCTS, INC.  
37-32 Northern Blvd. Long Island City, N. Y.



"The ABILITY to serve well is as important as the WILL to do so."





"We're taking a sales course now in how NOT to sell anything."

as tire-repair materials are patches, cements, blow-out shoes, and "similar items for the repair of tires, tire casings, and tubes".

\* \* \*

An increase in the rate of producing replacement parts for medium and heavy trucks, trailers, and buses was authorized by the WPB. Under the new order, manufacturers may produce during the first quarter of the present year 60 per cent of the replacement parts sold for replacement purposes during the last half of 1941. This would permit an average operating rate 5 per cent higher than the 1941 period. Medium and heavy trucks are those of 1½ ton and larger.

\* \* \*

March production of medium and heavy trucks has been set 34 per cent more than the March, 1941, production. The WPB has ruled, however, that the vehicles made cannot be equipped with tires, casings, or tubes. Trucks can be supplied for delivery to dealers, but at that point must be removed and returned to the manufacturer. Operators who would buy next month's trucks will need a reserve of serviceable tires.

\* \* \*

Despite the government's action in authorizing construction of additional facilities to boost the annual production of synthetic rubber to 400,000 tons a year, Dr. E. R. Weidlein, chief of the OPM chemicals branch, has estimated that only 200,000 tons will be possible with the facilities available the first of next year. To achieve even this production, which represents a third of our normal rubber needs, the rubber, chemical, and petroleum industries must pool their patents, resources, experience, and technical skills, Dr. Weidlein explains,

and high priority ratings will be needed on noncorrosive steel for equipment.

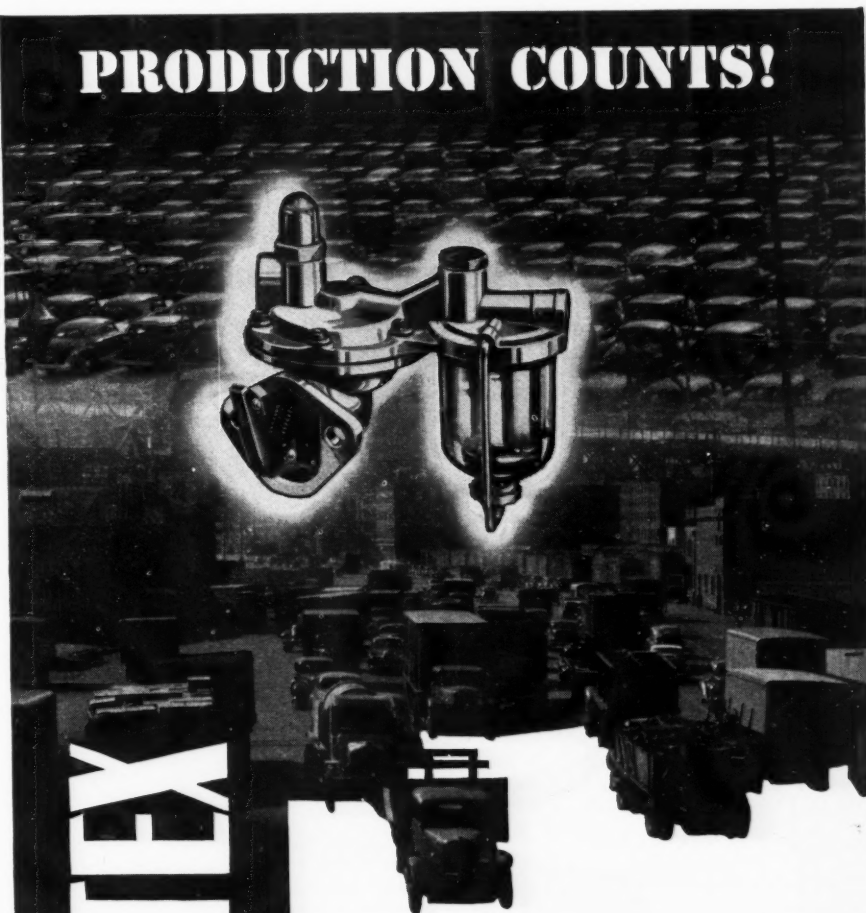
At present, plans are to produce a type of synthetic rubber that will be 95 per cent as efficient as natural rubber for automobile tires. The standard type is known as "Buna S" of which butadiene and styrene are the chief ingredients. Butadiene is made from petroleum, natural gas, alcohol or acetylene. Styrene comes from benzol, which is derived from the coke industry.

It would be dangerous to relax the present system of tire rationing, ac-

ording to Price Administrator Henderson. With adequate supplies of synthetic rubber still in the planning stage and with no immediate prospect of improvement in the Malay and East Indian situation, Henderson pointed out that it may become necessary, if the war does not end quickly, to use all the synthetic rubber we can produce to supply military needs.

An amendment to the tire-rationing order was announced last month by OPA to permit eligible light-truck owners to buy new 6-ply and 8-ply tires as well as 4-ply.

## PRODUCTION COUNTS!



Now that every car and truck is being called on to produce more mileage, more speed—more results, AIRTEX Fuel Pumps are commanding more attention than ever before. AIRTEX Fuel Pumps with the AIRTEX 50,000 mile guaranteed diaphragm are producing millions of miles of economical, trouble-free performance on all types and makes of cars and trucks—are helping to keep America's automotive might at full strength and peak performance. This is no time to guess at performance—use AIRTEX Fuel Pumps for guaranteed results!

**AIRTEX AUTOMOTIVE CORPORATION**  
FAIRFIELD ILLINOIS

## VALVE JOBS

(Continued from page 58)

"It ain't hard, especially on an engine like this. You check it cold, so you can do it with the head off. When the intake valve closes on the cylinder your workin' on, you just turn the hand crank half a revolution."

Chuck began to replace the valves and wagged his head dismally.

"And I said a carbon-and-valve job was a cinch," he said.

Pop slapped him on the shoulder. "You've learned a lot this morning,

kid. Any time you meet a mechanic who realizes a job's got to be done right, you've met a good mechanic. It's never a cinch to be right. I guess that ends the lesson." He turned away but stopped. "No. There's one more thing. I didn't mention it because this is only a 1940 model and hasn't got much mileage and the valve springs ought to be in good shape. But on older cars the springs ought to be tested."

"That must be a pretty tough job," said Chuck.

Pop picked up several of the springs and took them over to the bench. One by one he stood them in a row. "See

here," he said. "They're all the same height, so they're all pretty sure to be still good. If some of them was weak they'd be different lengths, because you wouldn't find them all goin' bad at one time. Any time you ain't sure, send the springs over to the jobber and have them teste. Some shops have got spring testers of their own, but I never got around to buyin' one.

"But whatever you do, don't forget the springs, especially if the car's rolled up important mileage. A valve spring does a tremendous amount of work. It's compressed and expanded once every other revolution of the crankshaft. That's about 1,500 times a minute at high speed. The best steel in the world can't go on doin' that forever. A weak spring causes the valve to bounce on its seat at high speed and you'd have a miss."

"Does that mean overhead valves, too?" asked Chuck.

"Yes. And I'm glad you mentioned that type of engine, because you've got rocker arms to think about. The bushings wear in time and occasionally you've got to replace them."

The extension bell of the office phone jangled and Pop turned away once more. "Put the head on, kid," he said. "But I want to check the tappet clearance before you button it up. And don't forget to remind me to tell you some more about refacing valves."

On the way to the office he half hoped it was another kid like Chuck, calling up to ask for a job. But he knew it wouldn't be. More likely it was somebody calling one of his mechanics to offer him a job in an ordnance plant. But, Pop reflected, the possibility didn't get him down the way it used too. Chuck was learning fast. And he wasn't eighteen yet. It would be more than a year before the draft got him.

### Eastern Air Division

#### Is Created by G M

C. E. Wilson, president of General Motors, has announced the formation of an Eastern Aircraft Division of the corporation for the purpose of undertaking the manufacture of fighting planes for the Navy.

The organizing of this division is part of the corporation's broad program of rearranging its plants and facilities for efficient production of the new war materials which are now required.

Included in the new division will be the Fisher Body plant at Tarrytown, New York; the Fisher Body plant at Baltimore, Md.; the Delco Remy plant at Bloomfield, N. J.; the Ternstedt-Trenton plant at Trenton, N. J., and the Linden Division plant at Linden, N. J.

L. C. Goad will be general manager of the new division.

# RESEARCH

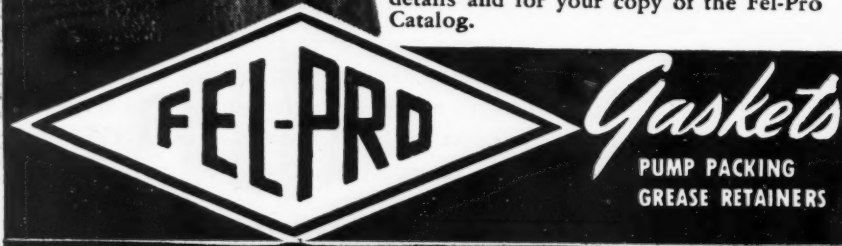
IS THE KEY TO FEL-PRO SUCCESS  
IN SERVING INDUSTRY, CAR MAKERS  
AND AUTOMOTIVE REPLACEMENT FIELD



WHEN you sell Fel-Pro you are offering gaskets made by a manufacturer with many years' experience in designing the right gaskets to meet every possible need, and to stand up under the toughest service — able to resist the highest temperatures and compressions of modern motors.

With Fel-Pro you offer a complete line covering the requirements of every gasket job. Packaged in boxes, sets, individually, for easier and more economical handling.

Fel-Pro Display Panels make gasket selling easier, faster, more profitable. Write for details and for your copy of the Fel-Pro Catalog.



FEL PRODUCTS MFG. CO., 1510 CARROLL AVE., CHICAGO, ILLINOIS.

PUMP PACKING  
GREASE RETAINERS



### **Geschelin Appointed**

#### **To War Post With Navy**

Joseph Geschelin, Detroit Editor, Motor Age, has been appointed by the Bureau of Ships, U. S. Navy, to assist in expediting the procurement and manufacturing program of the Bureau of Ships within the automotive industry. Particular emphasis will be placed upon the use of idle facilities and the facilities of automotive parts and equipment producers.

### **Russell Mfg. Co. Head**

#### **Joins Aviation Firm**

George M. Williams, president of the Russell Manufacturing Co., Middletown, Conn., brake-lining makers, has been granted an indefinite leave of absence to join the Vultee-Consolidated Aircraft Corp. as first assistant to T. M. Girdler, recently named chairman of the aviation company.

Williams, it is announced, has in no way severed connections with the Russell company, but has simply been lent by the directors to Vultee-Consolidated for the duration of the war. He has delegated his duties at the brake-lining company to Carl J. Scherer, vice president and treasurer; Amor P. Smith, vice president and secretary, and Thomas M. Russell, Jr., vice president in charge of engineering.

### **Called by Marines**

The U. S. Marine Corps has just ordered to active service Lt. Robert L. Skidmore, Marine Corps (retired), who has for the past three years served the Marmon-Herrington Company, Inc., as export manager.

Skidmore is a native of Indianapolis where he was graduated from the Manual Training High School. Later he was graduated from the U. S. Naval Academy at Annapolis.

### **Safety Aids Red Cross**

Employees of the AC Spark Plug division of General Motors are engaged in a unique safety campaign to donate to the American Red Cross.

The novel campaign means a maximum potential contribution by the AC company of about \$275 every month to the Red Cross. It works this way: Every day that each of the 22 divisions at AC work without a lost-time accident, a half dollar will be given to the Red Cross. At the end of the month, the total of the daily awards accumulated will be turned over to the War Relief fund of that organization.

To keep the safety incentive at keen edge, if a lost-time accident occurs the division involved will not earn the daily awards for the rest of the month following the accident.

As the safety record at AC is one of the best in American industry, the Red Cross War Relief Fund can count on a good contribution.

### **Bessmer Moves Up**

The officials of The Timken Roller Bearing Co. have announced the appointment of Dwight A. Bessmer to the position of assistant director of Purchases. Bessmer joined the Timken company shortly after his graduation from the Michigan School of Mines in 1929.

### **Fire Bomb Order**

The Chemical Warfare Service of the War Department has awarded to the defense division of the Fram Corp. an order for procurement of incendiary bombs. Under the direction of Malcolm McCormick, Fram's defense head, the work will be done in a new plant. New men will be employed in this department which will reach peak production in March.

Fram will sub-contract a large part of the work, utilizing the available production of a number of metal fabricating plants in New England.

## **DON'T STRETCH, STOOP or SQUAT**

**HALLOWELL**

### **WORK BENCHES OF STEEL**



Patd. and  
Pend.

Are available in the Height, Type and Size to meet every machine shop and assembly operation.

Exclusive is the wide range of leg sizes (for proper working height) "Hallowell" provides for varying requirements. Available in standard and extra-heavy construction.

Rugged durability . . . standardized and interchangeable parts . . . smart appearance . . . AND—you are not restricted to one or two sizes.

Many automotive and repair shops find that "Hallowell" Work-Benches of Steel best meet modern needs—and the prices are inviting.

A request, on your business letterhead brings latest bulletins.

**STANDARD PRESSED STEEL CO.**

JENKINTOWN, PENNA. BOX 561

— BRANCHES —

BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO

## Chevrolet Launches New Service Program

A six-point service reorganization program, pointing virtually all facilities of Chevrolet dealerships into a campaign to aid American motorists to realize the ultimate values built into their cars, has been mapped by William E. Holler, Chevrolet general sales manager. The first three of 45 zone dealer meetings to carry the information to the field were held simultaneously Jan. 14 in three different cities, Indianapolis, Oklahoma City and St. Louis.

"Car conservation now is an issue of paramount importance," Holler said.

"Among other new suggestions we are presenting is a budget plan never before offered by Chevrolet, which will make service immediately available to every car owner. With a modest down payment, the motorist can avail himself of the 'car conservation' essential to the continued functioning of his vehicle. Payments may be spread over a convenient period.

"Augmenting this service is another of equal value to the motorist. We are making available credit cards

so that smaller service bills can be handled with a minimum of effort on the part of the driver. These cards are issued locally and will be honored by Chevrolet dealers in most localities where the motorist may need service.

"Every effort to facilitate service operations is being encouraged," Holler said. "We are currently recommending the establishment of a new dispatcher system, proved by a number of West Coast dealers. This new system brings a degree of efficiency to the service department rarely attained before, and guarantees that every motorist will get the service he needs when he needs it, with a minimum tie-up of his individual transportation."

Your repair shop in 1942 can be more profitable than it has ever been . . . if you get set to take advantage of the unusual conditions created by National Defense. New cars will be scarce! Old cars will need complete reconditioning to keep them rolling. HYPRESSURE JENNY can make money for you in 3 ways in this new market!

1. Sell motor and chassis cleaning jobs with washes and lubes. A "like new" engine cleaning brings \$1.50 to \$3.00—takes only 10 to 15 minutes. Owners buy readily—they know their cars have to last a long time, now!
2. Get \$15 to \$50 more for used cars (an established fact!) by spic-and-span JENNY cleaning before showing. Moves 'em faster, too!
3. Earn up to 40c more out of each repair dollar! JENNY cleaning before repairs saves 15 to 25 minutes of mechanic's time usually lost fighting dirt and grease. Statistics prove it!

Get ready for a profitable repair year. Learn how to wring extra dollars out of every job. Write today for information about The Hypressure Jenny.

**HYPRESSURE JENNY DIVISION**  
**HOMESTEAD VALVE MFG. CO.**  
P. O. BOX 95 CORAOPOLIS, PA.

## Plan Fan-Belt Supply

If results of the OPM's study of the overall rubber situation permit, the B. F. Goodrich Co. will market fan belts made entirely of reclaim rubber, which will give 80 per cent of customary service without drawing on the nation's crude rubber stockpile, it was announced here by William S. Richardson, general manager of the Industrial Products Division of the company.

"This development would contribute toward maintenance of civilian morale by permitting continued operation of cars and appliances while conserving rubber vitally needed for war equipment," Richardson said. "Last year 2,325,000 pounds of natural rubber went into replacement V-belts for automobiles and 2,260,000 pounds into replacements for domestic appliances," he added, emphasizing that the government's ruling limiting the use of natural rubber does not provide for the manufacture of any V-belts, either for original equipment or replacement purposes.

"Translated into tonnage, this is a saving of 2,500 tons of vitally needed crude rubber—or about the equivalent of half a shipload from the Far East," Richardson said.

## Battery Rationing Denied

A report is being circulated, according to the Association of American Battery Manufacturers, Inc., that SLI batteries are soon to be rationed in a manner similar to the plans in effect for tires and automobiles. This rumor, says the association, was checked with OPM, which denied that any such action was under consideration.

Unless every possible effort is made to curtail the unnecessary purchases of batteries stimulated by this false rumor, the association warns, an unwarranted shortage of batteries might be created, and in turn could result in rationing orders. Strict rationing of storage batteries, the association points out, would greatly offset any gain of a short period of over-stimulated sales.



# LEGALLY SPEAKING

A lawyer's interpretation of Federal and local court decisions of interest to repairmen, presented each month

By C. R. ROSENBERG, JR.

## Contract to Protect Fraud?

While it's pretty hard to have a written contract set aside, still, if real fraud be shown in connection with the transaction, the courts will find a way to do it, despite "protective" clauses in the contract itself.

It happened that way recently in Massachusetts.

There a business man, relying upon certain oral representations made to him by the seller, entered into a written contract to buy certain items. One of the provisions in the contract was that the seller made "no representations" other than to identify the items and state the price. After paying over the money, the buyer learned that the oral representation made to him was false. In view of the written stipulation that there were "no representations" by the seller, could

the buyer get his money back on the ground of fraud?

The Massachusetts court decided that he could.

"Contracts or clauses in contracts attempting to protect a party against the consequences of his own fraud," said the court, "are against public policy and void where fraud inducing the contract is shown."

Public policy, the court thought, should not tolerate situations wherein a man, by making fraudulent representations orally, induces his victim to sign a written contract containing clauses protecting the wrongdoer from the consequences of his fraud.

"To refuse relief in such cases," said the court, "would result in opening the door to a multitude of frauds."

But note: A representation or promise as to future conditions or future performance is not fraudulent,

even though the thing promised never materializes. To constitute fraud, the false representation must relate to some material, existing or past fact.

(*Gates vs. Southgate*, 31 *North-eastern Reporter*, second series, 551.)

## Local vs. Non-Resident Business

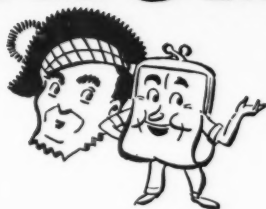
A California city imposed an annual license fee on business men having a fixed place of business within the city and an annual license fee in double the amount on business men having no fixed place of business within the city. In other words, business men coming into the city from outside to solicit and transact business had to pay a license fee twice that paid by local business men.

In a test case brought by an out-of-town business man, the Supreme Court of California said:

"A city, having the power to impose license taxes on business men, undoubtedly may classify them if the classification has some reasonable basis. To put those having a regularly established place of business in one class and those having no such regularly established place of business in another class is not in itself an unreasonable classification."

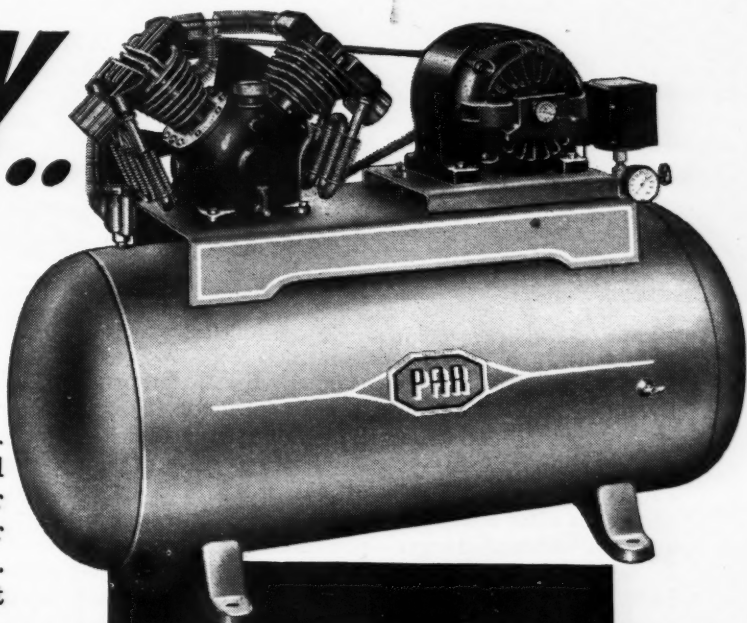
(Continued on page 80)

# ECONOMY..



COMPARE the number of cylinders . . . pumping speed . . . size of tank — and you'll know why you can buy more for your dollar in a PAR. Check its quieter operation . . . freedom from vibration . . . constant motor alignment . . . easy belt adjustment . . . convenient tank drain . . . simplified over-all design—and you'll see why it will give maximum economy throughout years of service.

For economy . . . you'll buy PAR!



# PAR

MODERN EQUIPMENT CORPORATION  
DEFIANCE, OHIO, U. S. A.



"HOW TO BUY AN AIR COMPRESSOR" . . . \*  
FREE BOOK CHOCKED FULL OF WORTHWHILE TIPS—  
GET YOUR COPY BEFORE BUYING . . . WRITE TODAY!

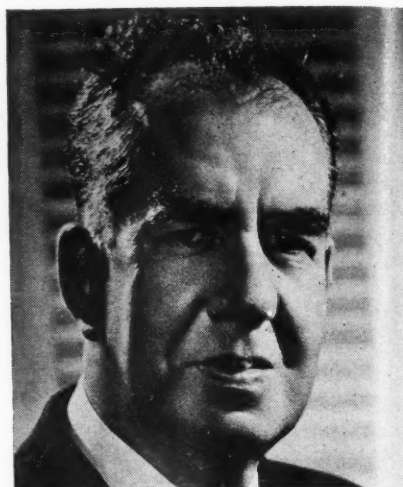
## LAWYER SPEAKS

(Continued from page 79)

While agreeing that there might properly be a substantial difference in the license tax or fee imposed on the different classes of business, the court pointed out that the difference must not be so great as to destroy the business of non-residents. Non-resident business men, like all other citizens, are entitled to the "equal protection" of the laws which the Constitution guarantees to all. (*Silverton vs. City of Menlo Park*, 109 Pacific Reporter, second series, 928.)

## Authority of Manager

A business house may repudiate a deal on the ground that the salesman, clerk or other employee who made it did not have authority to do so, but an agreement made with the manager of a business is ordinarily binding on the employer or concern for whom he is manager. An Alabama court said: "Unless otherwise agreed, authority to manage a business includes authority to make contracts which are incidental to such business or are reasonably necessary in conducting it." (*Knight vs. Ardis*, 199 Southern Reporter, 712).



A. W. Herrington

## CHECKING TIRES HELPS YOUR BUSINESS AND YOUR COUNTRY!



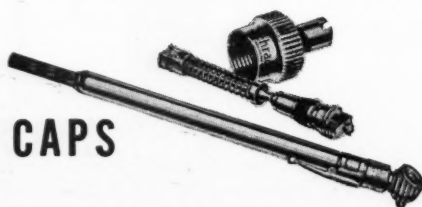
Special attention to every customer's tires is important to your livelihood as well as to your nation's Victory program. Every extra mile you help your customers get from their tires, means that much home business you will do in gas and oil, lube jobs and repair work. Make it a point to check pressures before, as well as after inflation. When one tire loses more than the others it warns of danger—possible need for repair.

To help your customers . . . your country . . . and your pocket-book . . . check all tire pressures before inflation and "recap" every tire valve after inflation with an air-tight Schrader Cap.

A. SCHRADER'S SON, BROOKLYN, N. Y.

Division of Scovill Manufacturing Company, Incorporated

**Schrader**  
REG. U.S. PAT. OFF.  
VALVE CORES VALVE CAPS  
TIRE GAUGES



## Herrington Named New President by SAE

Announcement has just been made by the Society of Automotive Engineers that A. W. Herrington has been chosen to guide the efforts of that organization during the first year of America's active participation in the war. He is the head of the Marmont-Herrington Co., Indianapolis, Ind., manufacturers of highly specialized automotive equipment for civilian and military services. He is also chairman of the board of directors of the Merz Engineering Co., a Marmont-Herrington subsidiary, specializing in the manufacture of precision gauges, instruments and machines.

Herrington, who was elected overwhelmingly by the members of the Society, is eminently fitted for the job. Few men in the industry are more widely known and respected for outstanding accomplishment in the field of automotive engineering—and his intimate acquaintance with military transport problems throughout the world, gained during the first World War and since that time in frequent business trips to Europe, North Africa and the Near and Far East, will be of inestimable value to the country in the difficult days ahead.

## Fort Wayne Dealers Name Goral President

The following officers of the Fort Wayne Automobile Trade Association were elected recently to serve during 1942:

President, Clarence Goral, Dodge-Plymouth; vice-president, Ray Pfeiffer, Studebaker; secretary, C. B. Hayner, Dodge-Plymouth; treasurer, E. W. Stouder, DeSoto-Plymouth; directors, Ray Bueter, Chevrolet; Haywood Davis, Pontiac; Clarence Grieger, Chevrolet.

The Fort Wayne Association is one of the most active and aggressive dealer groups in the Middle West.





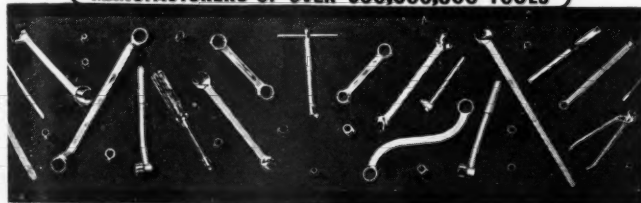
**Which Way IS THE WIND BLOWING?**

With full speed ahead the order of the day for American industry, precision and dependability are absolutely essential. Duro Tools guarantee the highest degree of performance and uninterrupted service.

**Duro Metal Products Co.**  
2649 N. Kildare  
Dept. MA1 Chicago, Ill.

**DURO**

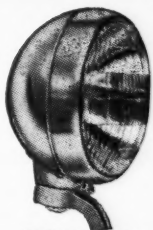
MANUFACTURERS OF OVER 500,000,000 TOOLS



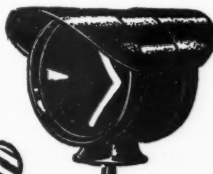
## ARROW Safety DEVICES

will help keep your business rolling

Your customers are really car conscious now. They are willing to spend money to keep the old bus up "for the duration." Lighting is an important part of this program and the complete line of ARROW Safety Devices helps you cash-in, in a big way, in both the passenger car and the commercial field. See your jobber or write direct. Dept. 118.



SEALED BEAM HEADLIGHTS AND FOG LAMPS



TURN SIGNALS



MARKER LIGHTS



REFLECTORS



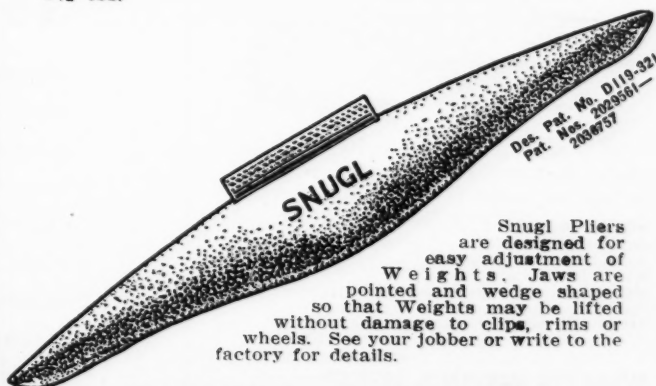
MIRRORS

**ARROW SAFETY DEVICE CO., Inc.**  
MEDFORD, N. J.

For Easier Steering and Safer Driving  
**INSTALL**

## Snugl FADE-AWAY Balance Weights

Snugl Fade-Away is the balanced weight with the DOVE-TAIL CLIP that is SELF-LOCKING with a BULL-DOG Grip. Easy to install and adjust it cannot rattle or work loose at high speeds. They provide perfect wheel balance. Made in sizes from 1/2 oz. to 1 1/2 lbs.



### MID-WESTERN AUTO PARTS

Manufacturers

824 E. Elm Street, Kokomo, Indiana

Western Distributor: Kenneth V. Mills, 910 W. Pico Blvd., Los Angeles, Calif.

Cleaning Speed Triples on Warm Engines...  
Faster than Steam Cleaning  
... Much Lower Cost



## GUNK!

—Used Cars for Quick Resale  
MUCH FASTER THAN STEAM CLEANING  
... IF MOTOR BLOCK IS WARM  
Spray It On ... Hose It Off!



LIST PRICE  
\$3.00

1 Gallon Size  
For Dealer Net Cost  
... See Coupon

THE CURRAN CORP. Mfg. Chemists, Malden, Mass.

**GUNK P-96 CONCENTRATE**  
General purpose garage and chassis degreaser. Dilute 9 parts low-cost kerosene ... brush or spray on parts to be cleaned.

Sold As A  
CONCENTRATE  
★  
1 GALLON  
MAKES 10  
★

Not in stock at my jobber ... attached to my Business letter head is my check, or M.O. on the condition that you ship me a 1 gallon size GUNK at dealer's net cost \$1.75—(\$1.90 west of the Mississippi) by FAST PREPAID RAILWAY EXPRESS.

NAME .....  
ADDRESS .....  
CITY ..... STATE .....

*Here is a brief digest of important articles appearing in this issue of MOTOR AGE. Read the digest and discuss them with your customers.*

## VICTORY DEMANDS AUTOMOBILES

Of all the questions arising from the war, the one that affects the serviceman most vitally is that of keeping automobiles in operation. A great deal of loose talk about banning this and that has apparently led some per-



sons who should know better to conclude that we can win the war by laying up most if not all our automobiles. This hard-hitting article cuts through the fog of rumor and guesses to prove that America cannot win the war unless its automobiles are kept running.

## WHAT'S WRONG HERE?

Here in a single picture is a lesson in workmanlike habits in the use of tools that will pay big dividends to the serviceman who calls it to the attention of new mechanics. Admittedly, a pair of pliers, which is the subject of this month's picture, is a small thing, but the time that can be wasted and the damage done if the pliers are mishandled are important. There'll be other like pictures in issues to come.

## SUPER SERVICE IN NEW YORK

A few years ago, a Manhattan shop sold nothing but tires and tire service. It was doing exceptionally well. Yet it realized there was much more business to be had if it could obtain all the business of owners who bought tires at the shop. Acting on this belief, the shop added a long list of departments, and the belief was amply justified. Here is a description of the resulting success.

## TRUCKS WITH POWER BRAKES

Hundreds of automobile repair shops have long serviced a few trucks along with passenger cars, and now that the trucks are being driven far-



ther and harder to meet war needs, this type of service is mounting. Recognizing this trend, MOTOR AGE is offering service data of particular

# JOBBER'S OF THE FEBRUARY

**W**EEK by week, the realities of war are brought closer to the automotive serviceman. Tires are no longer being made for civilians, nor are new automobiles. An adequate supply of replacement parts seems assured for at least a year and a half, but the shortage of rubber and other essential materials may bring about a scarcity of certain items.

In view of all these restrictions and uncertainties, it is easy to become pessimistic, and many observers have already taken the easy way. The cold, hard fact is that automobiles are vital to transportation and, therefore, to America's war effort. The serviceman alone can keep America's transportation system working.

It is a jobber's task to supply the serviceman with parts and tools, but it is also part of his job to help clear up for his customers any misconception about the repair man's rôle in wartime. The articles digested on this page will help him do it.

interest to shops handling trucks. This month the subject of a helpful article is power brakes.

## SERVICE FOR THE DURATION

Here and there an automobile dealer has been gifted with enough foresight to realize that his main dependence in case of war would be his service department. Now that service has become not merely the chief but virtually his only source of income, it is interesting to find such a dealer as the one in Seattle, who had established himself as a serviceman just before the storm broke. His success is described in an article of timely interest to every serviceman who has to handle a mounting volume of service business and get the most out of it.

## YOU CAN MAKE TIRES LAST LONGER

So far, the severest blow dealt by the Japs to our intention to keep automobiles running has been their seizure of Malayan and East Indian rubber plantations. This makes it imperative that every owner make his tires last as long as he possibly can. He can increase tire life greatly by avoiding a few bad driving habits and by having his tires checked and serviced regularly. This article gives the serviceman some facts that will enable him to present the case for tire care in a forceful and convincing manner to the customer.







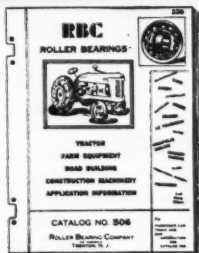
## Keep the Tractors Rolling with **RBC TRACTOR BEARINGS**

Start your buying of TRACTOR BEARINGS in this New RBC "Reedeze" CATALOG No. 506.

Saves Time—Easy to Read—Light in Weight  
—Helps Sales—Send for Your Copy.

**ROLLER BEARING COMPANY**  
of AMERICA

26 Whitehead Road TRENTON, N. J.



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### EASIEST WAY TO SET AUTO GLASS

#### No Pounding of Glass Into Place!

You'll be amazed at how easy it is to install door glass and ventilating wings with

**EVERSEAL Channel Stripping.**

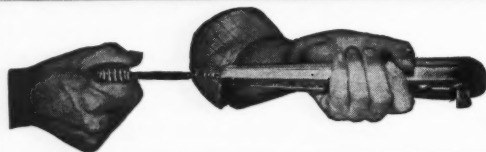
Very little pressure is required, and no pounding at all—which means **NO GLASS BREAKAGE!**

Find out the many other reasons why the majority of car manufacturers and glass-setting shops use **EVERSEAL**. Write for **FREE SAMPLE**.

**EVERSEAL PRODUCTS CO.**  
3820 Hazelwood Detroit, Mich.



## **SPEED-RATCH**



It has  
**ZIP-ACTION**

**removes or tightens nuts in a jiffy.**

**BEALL SPEED-RATCH** is the new, improved Ratchet Wrench with patented pull-chain in handle. Quickly and easily tightens or loosens nuts at the hard-to-get-at spots—without finger manipulation. Saves valuable time in Auto Repair work. Satisfaction guaranteed. **ASK YOUR JOB-BER** or write us. List Price **\$6.00**

**BEALL TOOL COMPANY** . . . East Alton, Illinois  
Div. of Hubbard & Company

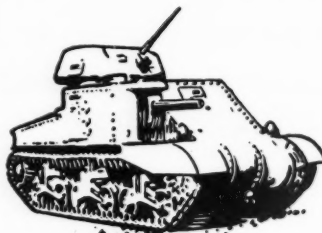
## **MOTOR AGE**

—is a publication keyed directly to the needs of the maintenance field. Built on the requirements of the serviceman. Edited by Bill Toboldt. Read it every month.

*A Chilton Publication*

**CHESTNUT AND 56TH STS.**  
**PHILADELPHIA, PA.**

## What your defense dollars buy



The **TANK** is to the Army what the tackle is to the forward line of a football team. It is the "break-through." Head-on, it crashes timber, houses, enemy fortifications. Once it has opened the way, the attacking force follows for the "mopping up."

The Nazis, using these great steel pachyderms which they produce in vast quantities, have been able to break through every fortified line in 14 conquered countries.

In America, the medium-sized tank is the popular size. A medium-size tank weighs 30 tons. To make it takes as much steel as would be used in 500 refrigerators, as much rubber as goes into 87 average automobile tires.

The planning of a tank takes as great skill as a large-scale construction job. One recently converted automobile plant, faced with retooling for tank production, had to put 200 engineers to work in day and night shifts for one month, mapping out machinery requirements and plant layout.

To match the mechanical might of aggressor nations today, America needs thousands of these tanks. They're rolling off the assembly lines now. They cost real money. Every time you buy an \$18.75 Defense Savings Bond or a 10¢ Defense Saving Stamp, you give your country money enough to buy a vital part for another new tank.



## **BUY DEFENSE SAVINGS BONDS and STAMPS**

AT ALL BANKS, POST OFFICES, AND SAVINGS AND  
LOAN ASSOCIATIONS



## Dealers Discuss Plans for Wartime Operation

"It is the government's duty to see that the economic burden of stoppage of automobile manufacture does not fall upon the nation's 44,000 dealers," Senator James E. Murray, of Montana, chairman of the Senate Small Business Committee, told more than 3000 members attending the 25th annual meeting of the National Automobile Dealers' Association at Chicago's Palmer House last month. "The dealers ask no special advantages. They should not be disrupted or bankrupted on orders from Washington."

The record attendance came not only to celebrate the association's 25th anniversary but also to gain assurance that they will be able to remain in business after the rationing of passenger cars and trucks begins Feb. 2.

"I did not come here to preach a funeral sermon because I do not think you will die," said Rep. Charles A. Halleck, young Indiana Congressman who nominated Wendell Willkie for the Presidency at the Republican National Convention of 1940 in Philadelphia. "The problem of the motor car dealers is of especial interest to me because of the fate of such a large number of persons directly and indirectly involved, both employers and employees, and of the millions who will be indirectly affected if many dealers fail."

Rep. Halleck is a member of the House Small Business Committee, which with a similar committee in the Senate has been endeavoring to aid the nation's automobile dealers since their stocks of new cars were "frozen" by Government order Jan. 1.

Leon Henderson, Federal Price Administrator, told the convention through his aide, Cyrus McCormick, that as far as OPA is concerned there is no present prospect of either rationing used cars or commandeering private cars. He believes any need for rationing used cars will be dispelled by a decline in car use due to the shortage of tires. Henderson stated that price ceilings and rationing of new cars and trucks are necessary to prevent inflation and to spread the reduced supply of new vehicles as far as possible among the civilian population upon the basis of work essential to winning of the war.

Henderson assured the dealers that cars now "frozen" will pass through dealer hands when rationed. However,

THE ONLY PATENTED

# LEONARD

air Cooled SPARK PLUGS



**in NEW  
Packaged Sets  
to fit  
CHEVROLET**

**FLAT EDGED  
ELECTRODES**

Test Them for  
Strong Blue Spark

## ANNOUNCING

**10 mm. Plugs to fit Chevrolet Passenger Cars and Light Trucks—1941-42—No. 10 E.**

**10 mm. Plugs to fit Chevrolet Trucks (heavy Duty Service)—1941-42—No. 10 F.**

**THESE** new 10 mm. Leonards complete our line of Packaged Sets, designed and spaced for all Chevrolet installations from 1933.

Air-cooled for continuous top performance. Note the flat electrodes with side-spacing instead of top-spacing, a feature that prevents oxidization of firing points, and holds gap spacing.

Test Leonard Spark Plugs for yourself against any plug on the market with equal gap spacing, and you'll be amazed at the extra fatness and intensity of Leonard's blue spark.

See your jobber for information on our complete line or write us direct.

**LEONARD SPARK PLUG CO., NEWARK, N. J.**

The Most Complete Line of Passenger Car and Heavy Duty Spark Plugs

he could not guarantee them that cars bought by the Army and Navy through dealers would be paid for at the full retail price because that is outside his jurisdiction.

The convention endorsed a four-point legislative program that is expected to be adopted by Congress as amendments to the Vinson Act, which originally outlined the President's emergency powers. The legislative program would provide penalties for those who violate rationing orders, authorize the President to fix the price of "frozen" articles at fair retail levels, provide for purchase of "frozen" articles by Government agencies or by other dealers at a fair price and release dealers in "frozen" goods from the terms of leases or mortgage agreements which they are unable to meet due to the tying up of their capital in inventories.

The RFC already has appropriated \$100,000,000 to help finance the handling of new cars produced in January that have been "frozen" by the government for necessity use a year hence. The Government will allow dealers to add 1 per cent of the selling price or \$15 per month, whichever is lower, for stocking these cars.

With dealers dependent upon service to carry the major share of their

overhead during the emergency, a service symposium participated in by three dealers attracted considerable interest. The participants were N. A. Lindsay, of Chicago; Joe Morris, of Waterloo, Iowa, and L. M. Stewart, of St. Louis. Highlights of the symposium were the need for more efficient use of shop space and manpower in order to get the highest possible service revenue, sale of lubrication and appearance (finish) agreements to assure regular customer patronage, free towing cards to assure accident business, free lubrication plan and "rattle" elimination to build customer good-will, direct-mail advertising of service to customers, 24-hour service, especially in war-plant centers, case histories on each car's service record, improved customer relations through educating employees, selling of service by an ace passenger car salesman, and scheduling overhaul jobs on slack days.

Subcontracting on war orders by dealer shops was discussed by T. S. McEwan, Chicago director of the OPM's Division of Contract Distribution, but he did not offer undue encouragement to dealers for this as a potential source of revenue. He said dealers may have some poten-

(Continued on Page 86)

FOR THE OIL GASOLINE & WATER CONNECTIONS

# VELLUMOID

VELLUMOID

### VELLUMOID GASKETS

Keep the old cars rolling! VELLUMOID Gaskets make tight connections which stay tight. You can rely on VELLUMOID.

Sold through Jobbers. The Vellumoid Co., Worcester, Mass.

**BLUE CROWN**  
SPARK PLUGS



**FINNED SHELL SAVES GAS**

Ask your Jobber  
MOTOR MASTER PRODUCTS CORP.  
4757 Ravenswood Ave., Chicago, U.S.A.  
Export Distribution  
Borg-Warner International Corp., Chicago

**SALESMEN WANTED**  
**NO PRIORITY**  
**DIFFICULTIES**  
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**FOR ACCOUNTING COURSES**  
**Lifetime Opportunity to Become**  
**DISTRICT MANAGER**

There was a shortage of accountants in World War I. History is repeating itself in World War II. Industry and government need more accounting-trained men and women. Demand already exceeds supply. To meet this situation we need more sales representatives. If you are age 28 to 50 and want to cash in on this big opportunity—without priorities to affect you—here is your chance to become District Manager for the oldest and largest home-study institution in America teaching accounting subjects exclusively.

**NO EXPERIENCE NECESSARY!**

You need have no accounting knowledge or previous experience as a correspondence school salesman. If selected, you will receive personal training and complete co-operation in developing leads. Liberal cash advances against commissions. Enjoy substantial earnings in a pleasant, dignified, permanent business of your own. Write us today giving full history of yourself.

**INTERNATIONAL ACCOUNTANTS SOCIETY, Inc.**

3411 SO. MICHIGAN AVE.  
Dept. B-4 CHICAGO, ILL.

**DEALERS PLAN**

(Continued from Page 85)

tial productive capacity in their shop equipment but he first urged that they put their full selling talent to merchandising service to keep customers' cars running and for possible reconditioning of old "jalopies". He said it might be advisable for dealers to list their productive facilities with the nearest Government contract agency or to canvass the vicinity for plants that might have small machine shop jobs to farm out. Chief drawback to subcontracting is the fact that there already is a surplus of the type of machinery found in dealer shops and that it often is difficult to meet quality standards on such war work.

Other speakers were: N. W. Shefferman, of Sears, Roebuck & Co., whose topic was employer-employee relations, and J. J. Newman, vice-president of B. F. Goodrich Co., who outlined the rubber situation. L. Clare Cargile, of Texarkana, Ark., retiring president, was the toastmaster at the convention banquet, at which the speaker was Dr. Merton S. Rice, of Detroit. Ray Chamberlain, executive vice-president of NADA, and Charles W. Bishop, NADA counsel, also spoke at convention sessions.

Harry Sommers, of Atlanta, Ga., was elected president of NADA for 1942, succeeding L. Clare Cargile, of Texarkana, Ark. Herman Goodin, of Huntington, Ind., was named first vice-president, Ralph Bonney, of Portland, Me., secretary, and David E. Castles, of St. Louis, was reelected treasurer. Cincinnati was selected as the site of the 1942 convention.

**Truck Tire Life**

The B. F. Goodrich Co., Akron, Ohio, has issued a booklet called "The Operator's Handbook." It deals with the various factors which affect the life of truck tires, and contains information covering the value of proper inflation and loads, the dangers of over- and under-inflation, mismatching of dual tires, causes of uneven tread wear and the effect of overloads and excessive speeds in generating heat, the prime enemy of rubber. This booklet is available at no charge to truck operators.

**Will Supervise Branches**

The appointment of J. Rogers Davis as supervisor of branches—newly created office of the Chicago Pneumatic Tool Co.—has been announced by H. Arnold Jackson, president of the company. Davis joined the company in December and will assist in the sales activities of Chicago Pneumatic's 21 district and sub-district offices. He will standardize sales office procedure and coordinate sales plans and quotas with branch and division managers.

**LION**  
*is still able to deliver the GOODS!*



**Dependable Quality**  
Replacement Parts For  
**FORD CHEVROLET PLYMOUTH**

**Now, in these stirring times, it is paying you DIVIDENDS for Lining Up With LION.**  
**We are still supplying our old customers the bulk of their requirements!**

**LION AUTO PARTS & MFG. CO., INC.**  
1920 S. Michigan Ave., 2214-20 Main St., 1239 Osborne St.  
CHICAGO DALLAS MONTREAL

*Clean as a Rifle Barrel!*

**RIMAC VALVE GUIDE BRUSHES**

A few up and down strokes—and every trace of carbon is removed with Rimac Valve Guide Brushes. No scratching. One handle with solid steel shank takes all sizes. Only 5 sizes fit 90% of all cars and trucks. SET No. HB-5, net \$2.25.

**RINCK-McILWAINE, INC.**  
16 HUDSON ST., NEW YORK, N. Y.

Send for Rimac Catalog

**Handy**

**RECT-O-LYZR**

**FAST CHARGER**  
Accurately tests each cell SEPARATELY and charges fast and SAFELY at automatically tapered rates—without removing battery from car. Price complete, **\$210.00**

Ask for Bulletin 308  
**BALDOR ELECTRIC CO.**  
4375 Duncanson Ave.,  
ST. LOUIS, MO.



Where Secure Seals Are Vital



**VICTOR**  
GASKETS, OIL SEALS  
GREASE RETAINERS



## WITTEK NOC-OUT HOSE CLAMPS



Standard throughout the industry for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Sold by dealers and jobbers everywhere.



**WITTEK** MANUFACTURING CO.  
4305 W. 24th Pl.  
Chicago, Illinois

## THE DE LUXE HORN



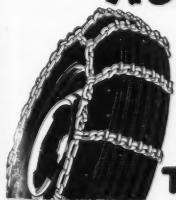
These graceful, yet sturdily constructed deep-toned air horns are specially designed for moisture-proof, trouble-free service. Their vibrant, penetrating, yet melodious signal increases driving security through certainty of being heard. Sound range from 1 to 10 miles. Write for literature.

**BUELL MANUFACTURING CO.**  
2973 Cottage Grove Ave., Chicago, Illinois

For Engine Bearings  
Clutch Plates & Parts  
King Bolt Sets

**Monmouth**  
is the name

## "KEEP CARS RUNNING"



W. S. KNUDSEN  
DIRECTOR OPM

SUPPLY and SERVICE

## WEED TIRE CHAINS

AMERICAN CHAIN & CABLE COMPANY, INC.  
YORK - PENNSYLVANIA

### Erickson to Direct

#### Oldsmobile Service

E. A. Erickson, former assistant general service manager for Oldsmobile, has been promoted to the position of general service manager, according to an announcement by H. A. Trevellyan, Oldsmobile's general sales manager. Erickson succeeds J. J. Dobbs, who was named Oldsmobile's defense service manager.

Additional promotions announced by Trevellyan were: F. A. Guckian, former service manager in the Detroit zone, who becomes assistant general service manager in charge of the western half of the United States. J. D. Rose will continue as assistant general service manager in charge of the eastern half. Guckian will be succeeded in Detroit by D. P. Chamberlin, who has been in charge of owner service contacts for the factory.

### 'Plenty Meat' Program

#### Is Arranged by MEWA

A "Plenty-Meat" program is in readiness for the MEWA convention and conference with manufacturers, which will be held, according to statement from association headquarters, Feb. 16, 17 and 18 at the Stevens Hotel, Chicago.

The program and related events fall into four classifications:

- (1) General sessions, the first or opening session beginning at 10 a.m., Monday, Feb. 16.
- (2) Clinic discussions, such as those which were so markedly successful at the MEWA 1940 Convention.
- (3) Open-Area Conference Booths.
- (4) Social Events. Open house Sunday, Feb. 15, and the Victory Dinner on Tuesday evening, Feb. 17.

Invitations by and on behalf of members are being extended by the MEWA to NSPA and MEWA manufacturers, as well as to non-member jobbers.

### Brake Lining Division

#### Is Purchased by Miley

E. G. Jacobs, general manager of the L. J. Miley Co., Chicago manufacturers of brake linings, brake shoes and brake products, announces the acquisition of the Brake Lining Division of the Union Asbestos and Rubber Co., Cicero, Ill. The purchase covered not only certain manufacturing equipment but all stocks of work in process and completed inventories. All orders for Union Brake Linings are now fulfilled by the Miley Co.

By the consolidation of these two lines, each a major line for more than 20 years, Miley brings under one roof such well known brands as Black Gold, Ebonite, Carbonite, Bloc-Tex and Precision Sets to create a single super line, especially well balanced for jobber distribution.

## CONSERVE WITH SERVICE!



## EARN PROFITS

Guard American resources. Save money for the nation's motorists. Make better than 66% profit plus labor revenue. Nor'way Complete Cooling-System Protection postpones replacement of rubber hose and safeguards brass, copper, solder, aluminum, iron, and steel. Nor'way self-selling products protect against leaks, rust, and corrosion, help to save anti-freeze, gasoline, and oil.

## FREE SELF-SELLER DISPLAY RACK

Split-case Assortment at  
Full-case Price



## NOR'WAY COMPLETE COOLING-SYSTEM PROTECTION

Consists of

**NOR'WAY CLEANER:** Loosens rust, grease, and scale without reverse flushing.

**NOR'WAY QUICK FLUSH:** Cleans while car is in service.

**NOR'WAY STOP LEAK:** Flows freely in system, works with all standard anti-freezes.

**NOR'WAY ANTI-RUST:** Protects against corrosion of all six metals.

SPRING DATING

ORDER FROM YOUR JOBBER TODAY!

**COMMERCIAL SOLVENTS**  
Corporation

17 East 42nd Street, New York, N. Y.



**STOP**  
PISTON SLAP  
OIL PUMPING  
MOTOR NOISE

**MASTER RECAMS**  
Patent Nos.  
2,252,149  
2,258,476

WHERRY MASTER RECAMS  
recam pistons approximately .004 to .005", individually designed for all late model cars. Easily installed without removing pistons. The profitable way to Stop Piston Slap, Oil Pumping and Motor Noise.

**50¢** Each

Ask for Bulletin 110

**WHERRY ENGINEERING CO.**  
3227 Morganford Rd., St. Louis, Mo.



JUST SAVING TIRES, MISTER,  
BUT I WON'T ROLL OFF, I'VE GOT  
**"SOUTHERN"**  
BRAKE LINING

**SOUTHERN**  
FRICTION MATERIALS CO.-CHARLOTTE, N.C.



**7" PORTABLE ELECTRIC SANDER**  
High speed, general purpose sander. For metal finishing, removing scale and rust, smoothing welds.

**THE UNITED STATES ELECTRICAL TOOL CO.**  
Cincinnati, Ohio

## Dealers Will Store New Cars Held for Rationing

Dealers will participate in the new-car rationing plan, announced tentatively by the OPA late last month, by storing about 130,000 of the cars now frozen. These cars are those shipped subsequent to Jan. 15 to complete the January quota of 204,000 units.

Dealers will not be permitted to sell any car delivered to them after Jan. 15 except upon specific permission of the OPA, and permission is not deemed likely to be granted before January next year. He will turn over to OPA on demand the tires and tubes with which such cars are equipped. When permission to sell is granted, he must sell at a price that does not exceed the total of the following:

Manufacturer's list price;

Federal excise tax;

Transportation allowance at car-load rail freight rate from factory to dealer;

A further allowance of 5 per cent of the total of the list price and the transportation allowance, or \$75, whichever is lower, for handling and delivery.

Further, the dealer may include in the sale price an amount equal to 1 per cent or \$15, whichever is lower, for each month after Feb. 1, 1942, that the car has been stored.

Rationing plans for new cars are tentative, but it has been announced that rationing will be handled by the same boards that control tire sales. "Eligible" buyers of cars are for the time being virtually the same as the eligible buyers of tires. An exception was made for persons who had purchased cars as of Jan. 2 but had not been able to get delivery by that date. Dealers were permitted to deliver such cars.

## Three-Dimensional Film Shows Making of Parts

Joe Adams, general manager of the Merchandising Division, The Toledo Steel Products Co., Toledo, Ohio, has announced that his organization has just released a unique new sound slide film in full natural color, and in *three dimensions*! This is reported to be the first film of its kind ever used in the automotive parts industry.

Entitled "The Seal of Approval," the film presents the story behind the manufacture of Toledo motor and chassis parts for cars, trucks and buses. It also highlights the detailed features of the more important items in the complete line.

Persons who have actually seen the film are extremely enthusiastic about its amazing qualities. Not only is it a sound film, in full natural Kodachrome color, but its unique three-dimensional properties give it living length, width and depth! The spectators wear Poloroid glasses, with

## BUY NO BATTERY CHARGER

Until You Have Investigated The VALLEY SUPERDUTY CHARGER

● Fully Guaranteed for Two Years—Valley, modernized superduty chargers will give you the utmost in value... enable you to cash in on the big profits in battery charging. Valley chargers are easy to operate... no moving parts... connecting to the lighting circuit. Low in operating cost. Order yours today.



Model SG-12 charges 1 to 12 6 volt batteries—\$28.00.

**Valley Electric Corp.**  
4221 Forest Park Blvd., St. Louis, Mo.

## PERMAG Cleaning Compounds

A quick, safe, efficient, guaranteed cleaner for concrete floors, pits, walls, motors, parts, trucks, radiators. Used by leading garages and transportation companies.

## MAGNUSON PRODUCTS CORPORATION

Main Office 50 Court St., BROOKLYN, N. Y.  
Representatives-Warehouses in principal cities of U. S.  
In Canada: Canadian PERMAG Products, Ltd., Montreal - Toronto

## Play Safe! Use Only



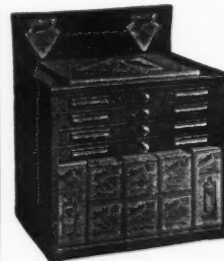
## PURITAN

The Genuine REFILL BRAKE FLUID

Mixes with ALL Others

Distributed through N. A. P. A. Warehouses

## Make Big Profits on Small Investment in SHURHIT IGNITION PARTS



Ask your Shurhit jobber or write us for details on General Ignition Assortments of fast-moving parts... Contact Points... Condensers... Caps... Rotors... Coils... Switches, etc.

**SHURHIT PRODUCTS, INC.**  
Waukegan, Ill.

lenses which correspond to the axes of the twin projectors. Thus, the viewer's right eye picks up only the image thrown by the right projector lens, and the left eye picks up only the image thrown by the left projector lens. The result is an amazingly real three-dimensional effect that is truly startling at first sight.

"The Seal of Approval" is available for showings before restricted automotive service groups.



# EDELMANN



*Home of the Profit Line*

- ANTI-FREEZE TESTERS
- BATTERY HYDROMETERS
- BATTERY FILLERS — SERVICERS
- BRASS FITTINGS
- FLEXIBLE FUEL LINES
- BRAKE PARTS
- HEATER PARTS
- TIMING LIGHTS
- CAN OPENERS — POURING SPOUTS
- FREDERICKS ARMATURES

Consult your Jobber or write

**E. EDELMANN & CO.**  
CHICAGO • ILLINOIS

HERE'S A HORSE OF A DIFFERENT COLOR



**Thermoid**  
Thermoidized  
PRE-STRETCHED  
**FAN BELTS**

STOP TROUBLE BEFORE IT STARTS

THERE'S ONLY ONE




**BURN-OUT PROOF  
DIRECTIONAL SIGNAL SWITCH**

In complete sets of Signal-Stats or as a replacement switch—ASK YOUR JOBBER

**SIGNAL-STAT CORPORATION**  
68 JAY STREET BROOKLYN, N. Y.

? DO YOU KNOW ?

... what motor oil has been used by Pan American Clippers for over 13 years and more than 900 million passenger-miles?



**WOLF'S HEAD**

100% Pennsylvania 35¢ a quart  
Wolf's Head Oil Refining Co. Oil City, Pa.

## Frey Heads Defense Work for Globe Hoist

Globe Hoist Co., manufacturer of hydraulic lifts for automobiles, buses and trucks, as well as for industrial materials handling and elevator use, will coordinate all defense production at its Philadelphia and Des Moines plants under a newly created Defense Products Division.

George Frey, formerly manager of bus and truck lift sales, has been named as executive head of the new division, according to an announcement made by F. W. Swanson, president of the concern.

## Buys Canadian Firm

The Ramsey Accessories Mfg. Corp. of St. Louis, Mo., has recently purchased the facilities of the Superior Piston Ring Co. of Canada, Ltd., Windsor, Ont., and in the future will operate in Canada under the name of The Ramsey Accessories Mfg. Corp. of Canada, Ltd. Work is already under way to fit this plant with the most modern equipment obtainable. Plans are to service the Ramco trade in Canada from this new plant with the same quality merchandise that has met with such outstanding success in the United States.

At the present time Ramsey is one of the largest suppliers of replacement piston rings in the United States, operating from the headquarters plant in St. Louis, Mo. and a newly acquired plant in Fruitport, Mich.

## Plug Price Advanced

The Leonard Spark Plug Co., Newark, N. J., announces an advance in the list price of all Leonard Spark Plugs. The advance is from 65 cents to 70 cents each.

The Leonard Company also announces that its 10 mm. plugs to fit Chevrolet are now furnished for 1942 models, in both light and heavy duty types. All Leonard heavy duty plugs are now made with flat electrodes, side-spaced for spark gap control, an exclusive Leonard feature that makes frequent regapping of the plugs unnecessary.

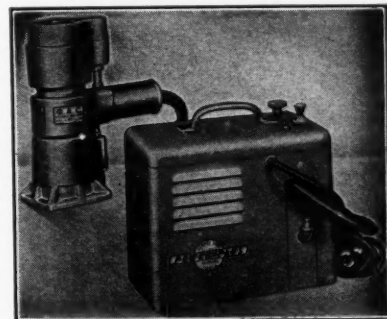
## Grafilid Display

The World Bestos Corp., Paterson, N. J., is distributing another in a series of advertising and display pieces featuring their new trade character, "Doc Grafilid." This one is a cut-out counter display about 19 inches tall, brilliantly done in eye-catching colors, and fitted with an easel support. The little "Doc" holds a regular Grafilid Brake Lining box and repeats the company's slogan, "Reline with GRAFILID .. and get that CERTAIN feeling!"

★ ★ ★ ★ ★

# EVERY JOB TODAY MUST BE DONE WITH SPEED AND EFFICIENCY

★ Put these ★  
**G.A.C. PRODUCTS  
TO WORK FOR YOU**

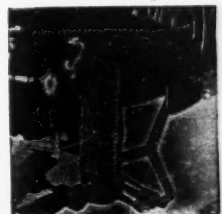


## TWO-SPEED, TWIN CYLINDER POWER UNIT

High speed pumps quickly force ram to contact load, then automatically cut out and powerful slower speed pumps lift load. Uninterrupted flow of power to ram.

## H-289 UNIVERSAL FENDER SPREADER

For close work where wide spreading is necessary and for spreading between fender and fender well. Closes to 1 3/4". Opens to 19 3/4" with 6" ram travel. \$14.75.



## The only Double-Acting Push-Pull HYDRAULIC JACK

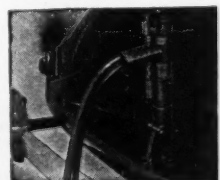
Supplies direct pull, for the repair of box channels, rear trunk racks, door posts, etc. Two units handle any type of body aligning, frame work, fender straightening, knee-action adjustment, steel running board straightening.

Operates in any position, even upside down. Safety valve prevents overloading, bending or breaking.

## Power In A Small Area

## H-80 PUSH-PULL SPREADER

For use with Perfection Push-Pull Jack. Ideal for trunks, pushing out sills, etc. Fits into 1" space. Open width 5 1/2" \$9.25.



Order from your jobber or write for catalog

**G. A. C. MFG. CO., Ashland, Ohio**

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# Advertisers' Index

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